

Supporting Information

Solid-State and Gas-Phase Structures and Energetic Properties of the Dangerous Methyl and Fluoromethyl Nitrates

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1.1. General procedures

All compounds were handled using *Schlenk* techniques under dry Ar. Silver nitrate, purchased from VWR, was dried in *vacuo* at room temperature for 30 min and fluoroiodomethane (donation from F-Select GmbH) was distilled under inert conditions before use. Melting points T_{melt} were determined on the X-ray diffractometer with an Oxford Cryosystem/ Cryostream controller of the 700 series. Boiling points were determined using the Siwoloboff method in a Büchi B-540 apparatus using a heating rate of $1\text{ }^{\circ}\text{C min}^{-1}$.^[1] The sensitivities towards impact and friction were determined with a BAM ball-drop and a BAM friction tester, respectively (method 1 out of 6).^[2] The samples for infrared spectroscopy were placed under ambivalent conditions without further preparation onto an Smith DuraSampLIR II ATR device using a Perkin Elmer BX II FR-IR System spectrometer. Samples for Raman spectroscopy were sealed in glass tubes. The measurement was carried out on a Bruker MultiRam FT Raman device using a neodymium-doped yttrium aluminum garnet (Nd:YAG) laser ($\lambda = 1064\text{ nm}$) with 1074 mW. The samples for NMR spectroscopy were prepared under inert atmosphere using Ar as protective gas. The solvent CD_3CN was dried using 3 \AA mol sieve and stored under Ar atmosphere. Spectra were recorded on a Bruker Avance III spectrometer operating at 400.1 MHz (^1H), 376.4 MHz (^{19}F), 100.6 MHz (^{13}C), 54.2 MHz (^{17}O), 40.6 MHz (^{15}N) and 28.9 MHz (^{14}N). Chemical shifts are referred to TMS ($^1\text{H}/^{13}\text{C}$), CFCl_3 (^{19}F), H_2O (^{17}O), MeNO_2 ($^{14}\text{N}/^{15}\text{N}$). All spectra were recorded at 299.15 K (26 $^{\circ}\text{C}$). Elemental analyses were performed with an Elemental Vario EL Analyzer.

1.2. Synthesis

Caution! MN and FMN are highly energetic materials with high sensitivities towards impact and friction. Even if no accident has occurred during the synthesis and manipulation of these compounds, additional proper protective precautions like ear plugs, Kevlar gloves, face shield, shatterproof jacket and helmet, Kevlar arm guards and heavy armored blast shields should be used when undertaking work with these compounds.

1.2.1. Fluoromethyl nitrate (FMN)

The reaction was performed under Argon as inert gas. Finely mortared AgNO_3 (9.42 g, 55.5 mmol, 15 eq) was placed into a small *Schlenk* tube. Fluoroiodomethane (0.25 mL, 3.7 mmol, 1 eq) was slowly injected through a septum on top of the silver nitrate under cooling at $0\text{ }^{\circ}\text{C}$. The mixture was reacted without stirring for 45 min at room temperature. Then the septum was replaced by another *Schlenk* tube, into which the product was condensed. The product was obtained in quantitative yield (0.35 g, 99.7%) as a colorless liquid with high vapor pressure.

$T_{\text{melt}} -91\text{ }^{\circ}\text{C}$; $T_{\text{boil}} 58\text{ }^{\circ}\text{C}$;

^1H NMR: $\delta = 5.99$ (d, $^2J(\text{F},\text{H}) = 52.0\text{ Hz}$, 2H, CH_2F);

^{13}C NMR: $\delta = 99.1$ (dt, $^1J(\text{F},\text{C}) = 228.8\text{ Hz}$, $^1J(\text{C},\text{H}) = 182\text{ Hz}$, CH_2F);

$^{13}\text{C}\{^1\text{H}\}$ NMR: $\delta = 99.1$ (d, $^1J(\text{F},\text{C}) = 228.8\text{ Hz}$, CH_2F);

$^{19}\text{F}\{^1\text{H}\}$ NMR: $\delta = -155.9$ (s, CH_2F);

^{19}F NMR: $\delta = -155.9$ (t, $^2J(\text{F},\text{H}) = 52.0\text{ Hz}$, CH_2F);

^{17}O NMR: $\delta = 446$ (2O, NO_2), 363 (1O, FCH_2O);

$^{15}\text{N}\{^1\text{H}\}$ NMR: $\delta = -52.3$ (d, $^3J(\text{F},\text{N}) = 1.7\text{ Hz}$, ONO_2);

^{15}N NMR: $\delta = -52.3$ (td, $^3J(\text{N},\text{H}) = 7.0\text{ Hz}$, $^3J(\text{F},\text{N}) = 1.7\text{ Hz}$, ONO_2);

IR: $\tilde{\nu}$ = 1670 (s, ν_{asNO_2}), 1461 (w), 1291 (s, ν_{sNO_2}), 1047 (m, ν_{CF}), 997 (s), 811 (s, ν_{NO}), 760 (m, γ_{wNO_2}), 654 (m, δ_{NO_2}), 575 (m), 456 (w) cm^{-1} .

Raman: $\tilde{\nu}$ = 3054 (w), 2997 (s), 2906 (w), 2799 (w), 1689 (w, ν_{asNO_2}), 1462 (w), 1412 (w), 1296 (m, ν_{sNO_2}), 1143 (w), 1049 (w, ν_{CF}), 1005 (w), 822 (m, ν_{NO}), 660 (w, δ_{NO_2}), 581 (m), 458 (m), 364 (m) cm^{-1} .

EA calcd (%) for CH_2FNO_3 : C 12.64, H 2.12, N 14.74; found: C 12.83, H 2.17, N 15.03.

1.2.2. Methyl nitrate (MN)

The reaction was performed analogous to the above for FMN, by using AgNO_3 (10.6 g, 62.6 mmol, 15 eq) and iodomethane (0.26 mL, 4.1 mmol, 1 eq) instead of fluoriodomethane. The product was obtained in nearly quantitative yield (0.32 g, 99.5%) as a colorless liquid.

T_{melt} -83°C ; T_{boil} 65°C ;

^1H NMR: δ = 4.10 (s, CH_3);

$^{13}\text{C}\{^1\text{H}\}$ NMR: δ = 61.1 (s, CH_3);

^{17}O NMR: δ = 446 (2O, NO_2), 310 (1O, H_3CO);

$^{15}\text{N}\{^1\text{H}\}$ NMR: δ = -39.9 (s, ONO_2);

^{15}N NMR: δ = -39.9 (q, $^3J(\text{N,H}) = 3.9$ Hz, ONO_2);

IR: $\tilde{\nu}$ = 1622 (s, ν_{asNO_2}), 1428 (w), 1281 (s, ν_{sNO_2}), 989 (s), 854 (s, ν_{NO}), 760 (m, γ_{wNO_2}), 652 (m, δ_{NO_2}), 578 (w) cm^{-1} .

Raman: $\tilde{\nu}$ = 3041 (w), 2963 (s), 2902 (w), 2833 (w), 1636 (w, ν_{asNO_2}), 1525 (w), 1438 (w), 1285 (m, ν_{sNO_2}), 1176 (w), 991 (w), 860 (m, ν_{NO}), 664 (w, δ_{NO_2}), 579 (m), 354 (w) cm^{-1} .

EA calcd (%) for CH_3NO_3 : C 15.59, H 3.93, N 18.18; found: C 15.77, H 3.89, N 18.55.

1.2.3. Methylene dinitrate (MDN)

The reaction was performed under Argon as inert gas. Finely mortared AgNO_3 (0.807 g, 4.75 mmol, 2.5 eq) was placed into a *Schlenk* flask containing 5 mL dry acetonitrile. Subsequently, diiodomethane (0.15 mL, 1.9 mmol, 1 eq) was slowly added under cooling. The solution was reacted at 50°C for 48 h. Acetonitrile was removed under reduced pressure and MDN was obtained as a slightly yellowish liquid.

^1H NMR: δ = 6.29 (s, CH_3);

$^{13}\text{C}\{^1\text{H}\}$ NMR: δ = 89.7 (s, CH_3);

^{14}N NMR: δ = -18 (ONO_2);

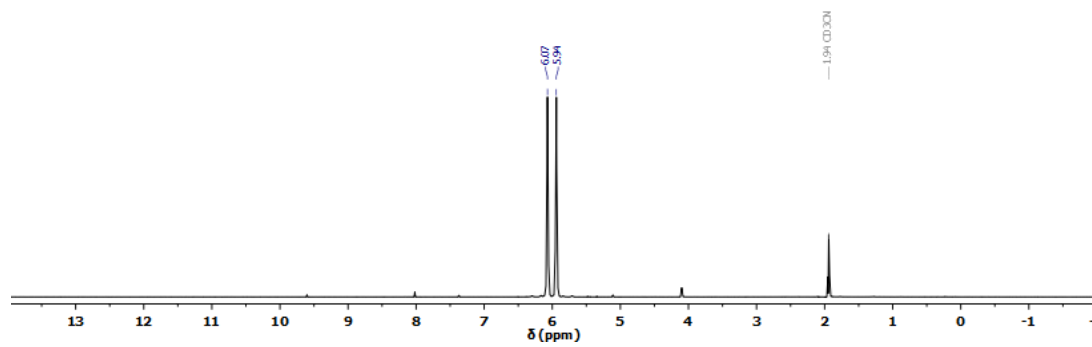
IR: $\tilde{\nu}$ = 3056 (w), 2947 (w), 1759 (w), 1657 (s, ν_{asNO_2}), 1422 (m), 1276 (s, ν_{sNO_2}), 1227 (w), 1118 (w), 1071 (w), 1015 (m), 958 (s, ν_{CON}), 838 (w, ν_{NO}), 782 (s, ν_{NO}), 745 (s, γ_{wNO_2}) cm^{-1} .

Raman: $\tilde{\nu}$ = 3056 (w), 2998 (s), 2946 (w), 1685 (w, ν_{asNO_2}), 1426 (w), 1298 (m, ν_{sNO_2}), 1023 (w), 840 (s, ν_{NO}), 605 (s, δ_{NO_2}), 569 (m), 419 (w), 250 (m) cm^{-1} .

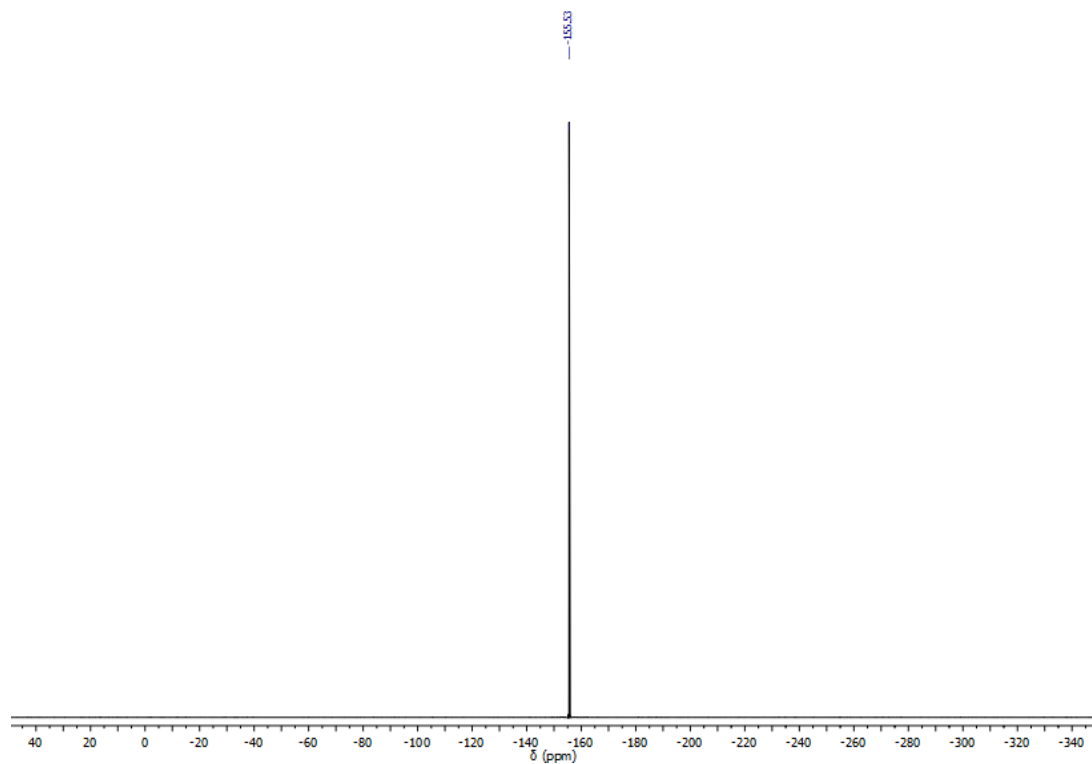
1.3. NMR spectra (CD₃CN, 26 °C)

1.3.1. NMR spectra (FMN)

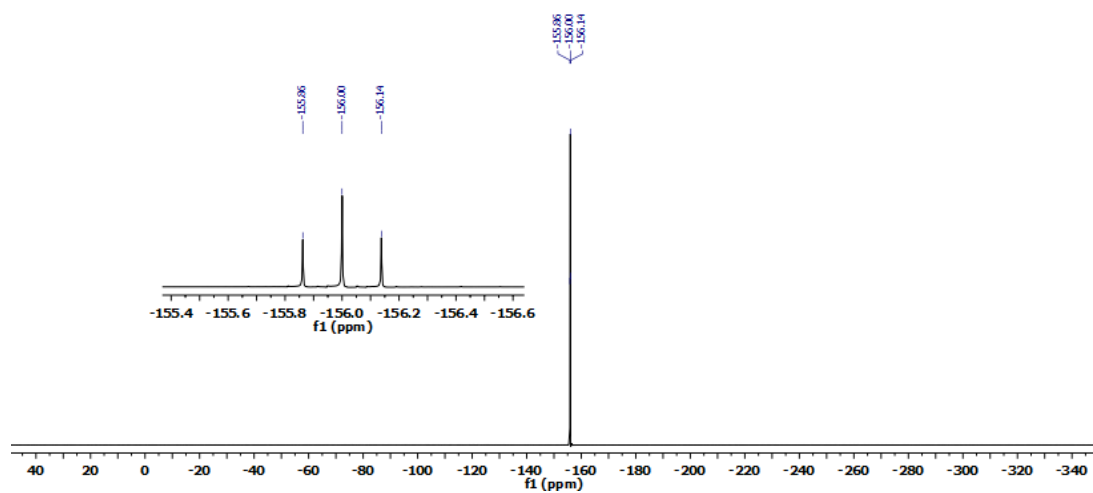
¹H NMR



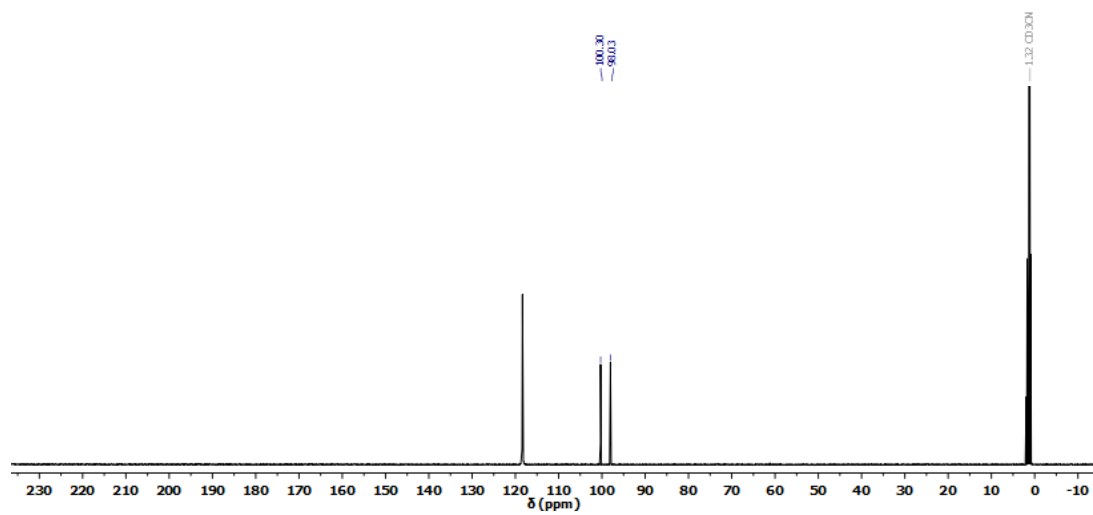
¹⁹F{¹H} NMR



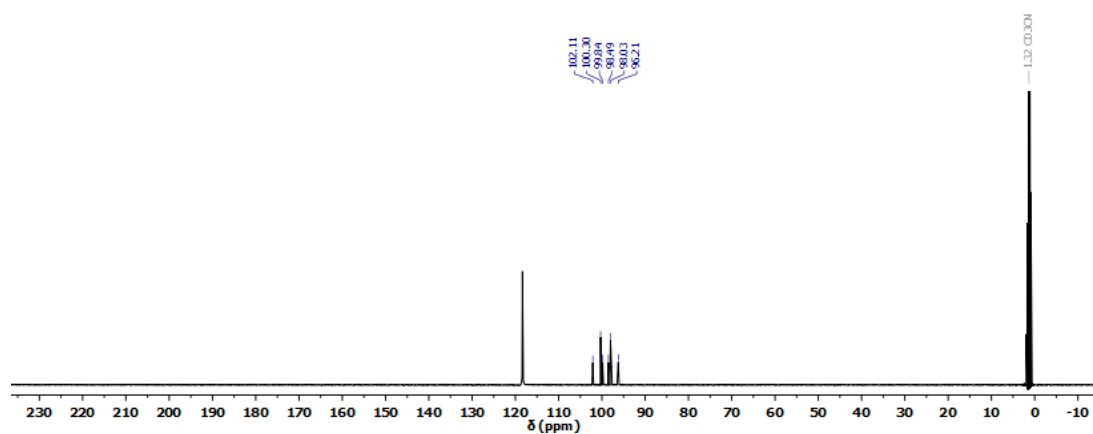
^{19}F NMR



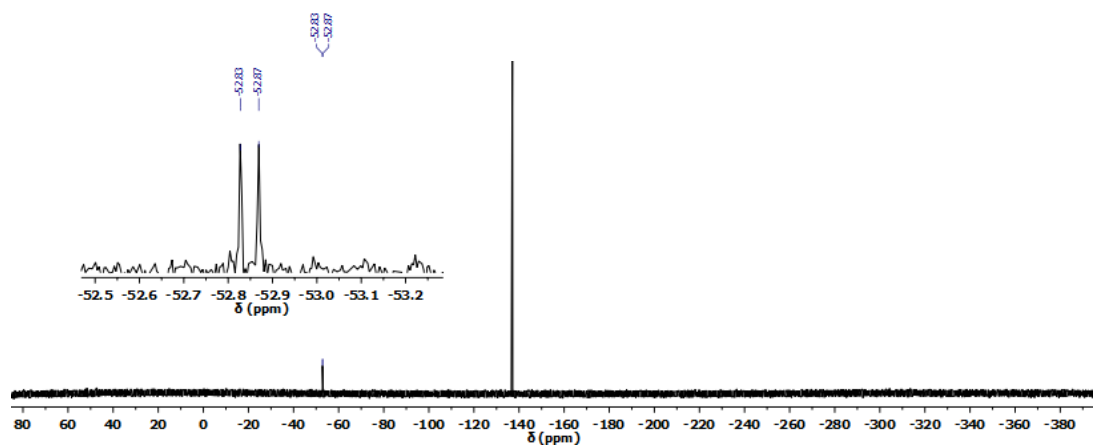
$^{13}\text{C}\{^1\text{H}\}$ NMR



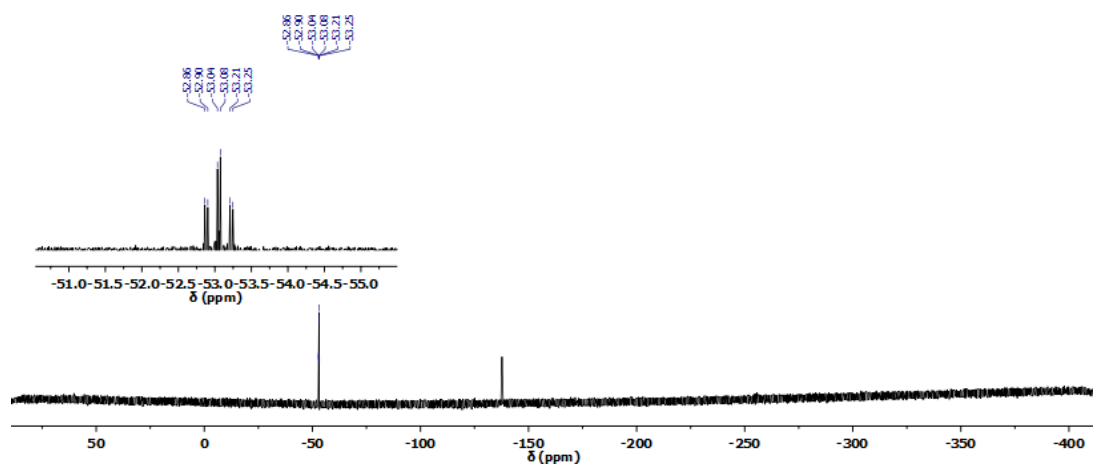
^{13}C NMR



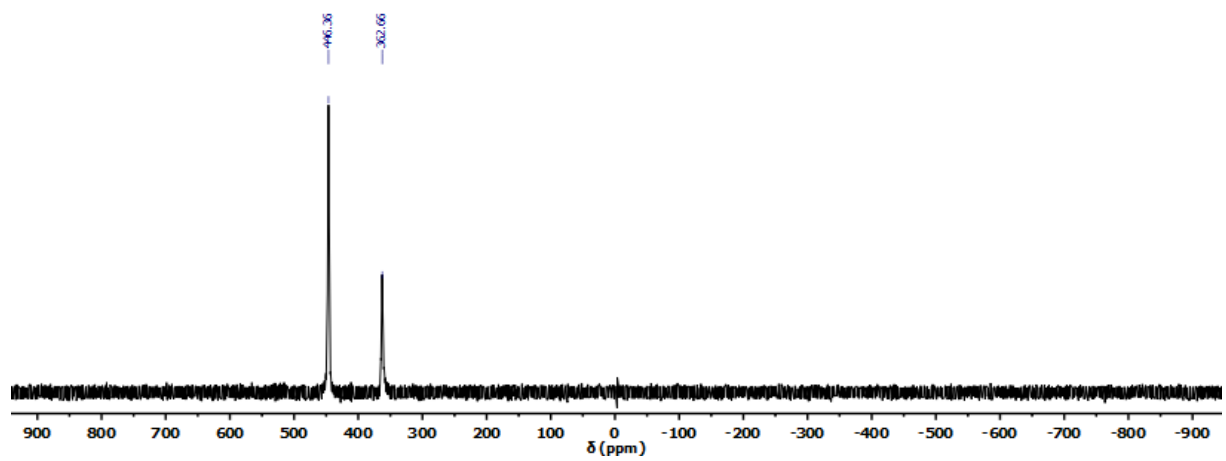
$^{15}\text{N}\{^1\text{H}\}$ NMR



^{15}N NMR

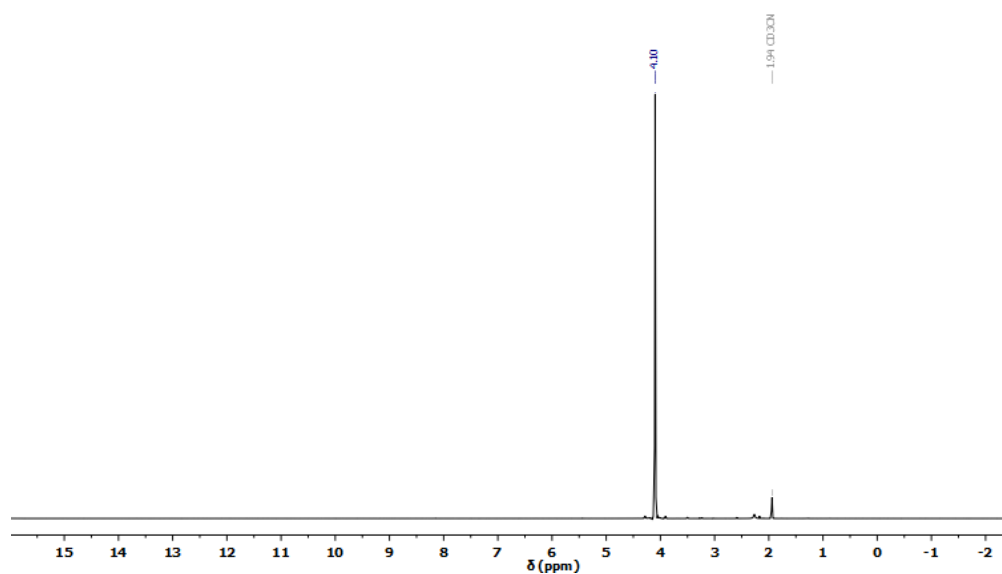


^{17}O NMR

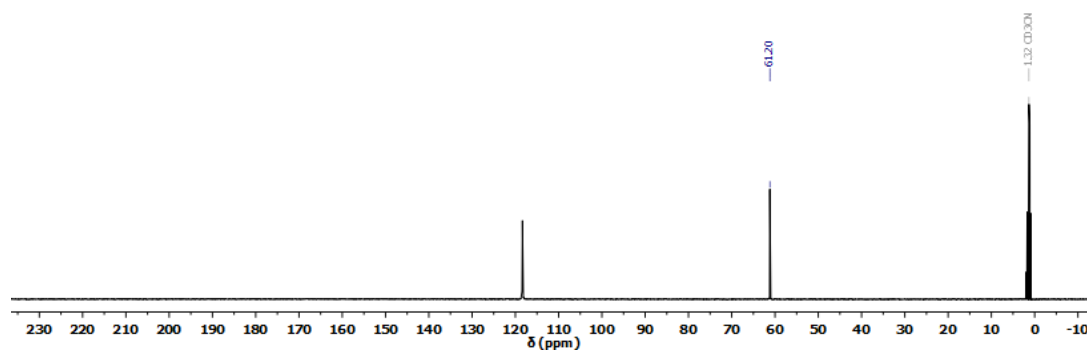


1.3.2. NMR spectra (MN)

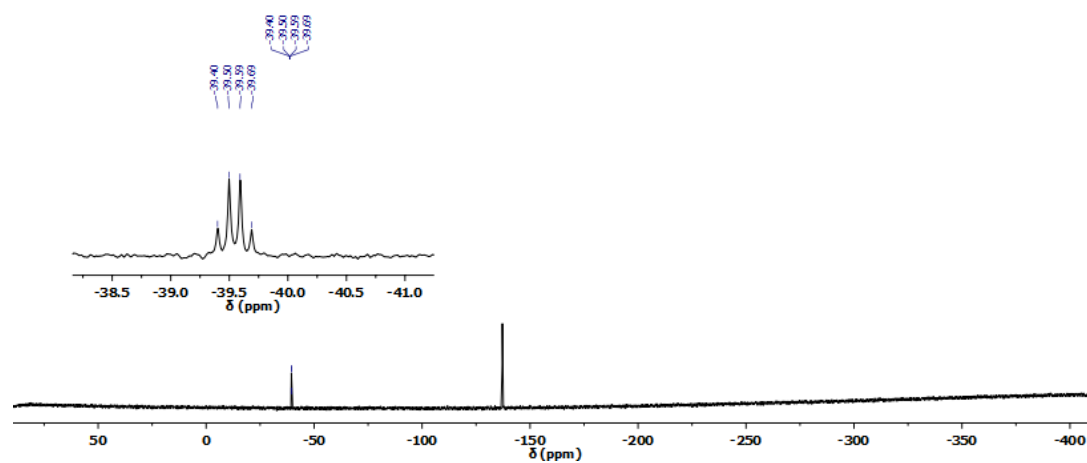
^1H NMR



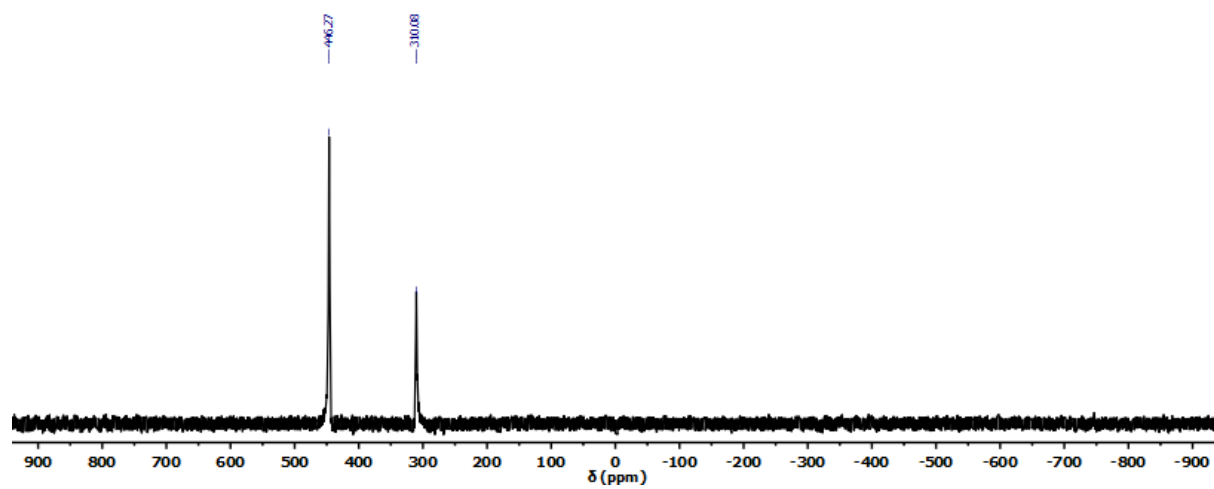
$^{13}\text{C}\{^1\text{H}\}$ NMR



^{15}N NMR

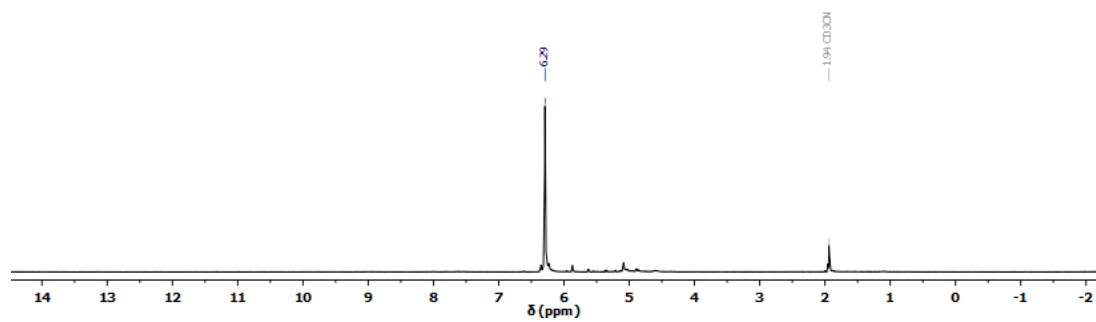


^{17}O NMR

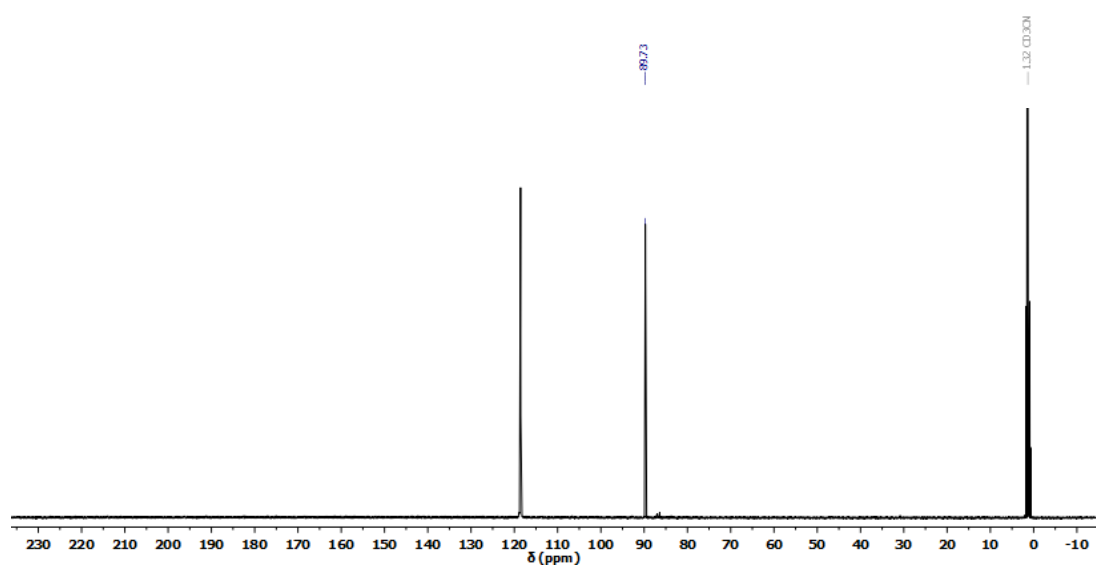


1.3.3. NMR spectra (MDN)

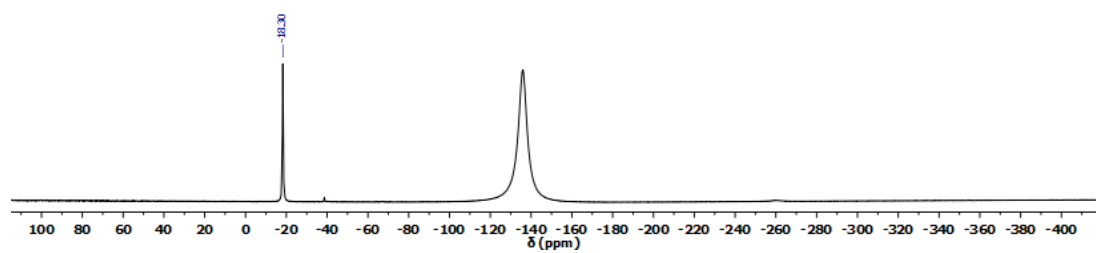
^1H NMR



^{13}C NMR

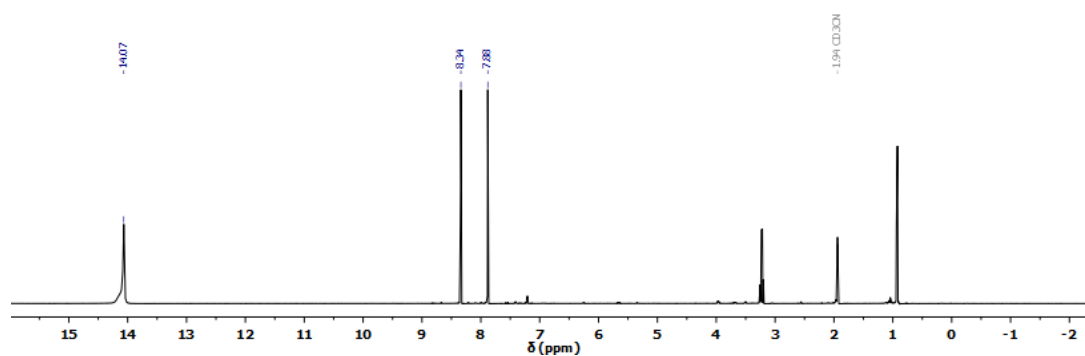


^{14}N NMR

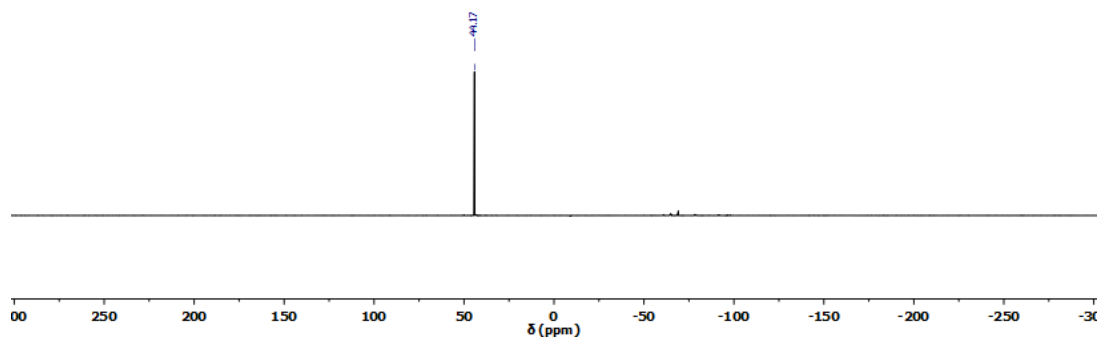


1.3.4. NMR spectra of MDN decomposition products

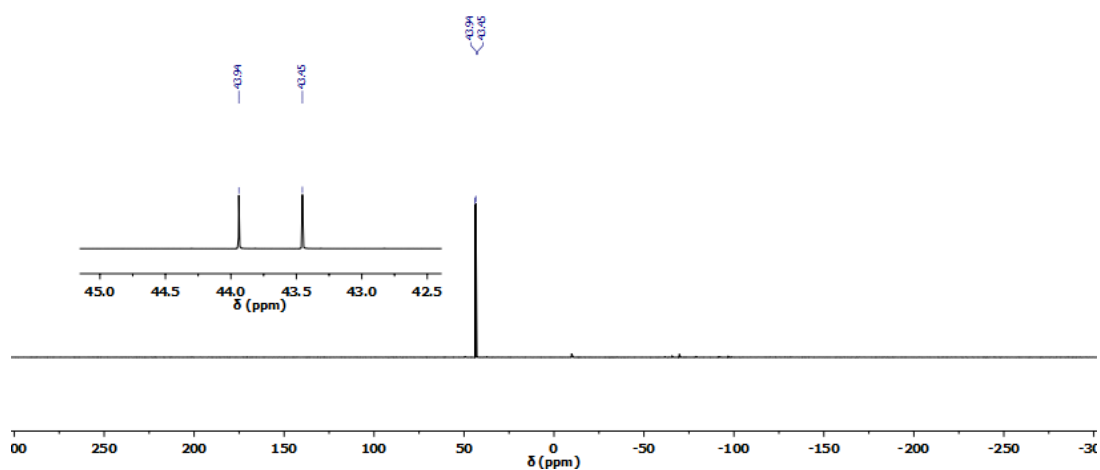
^1H NMR



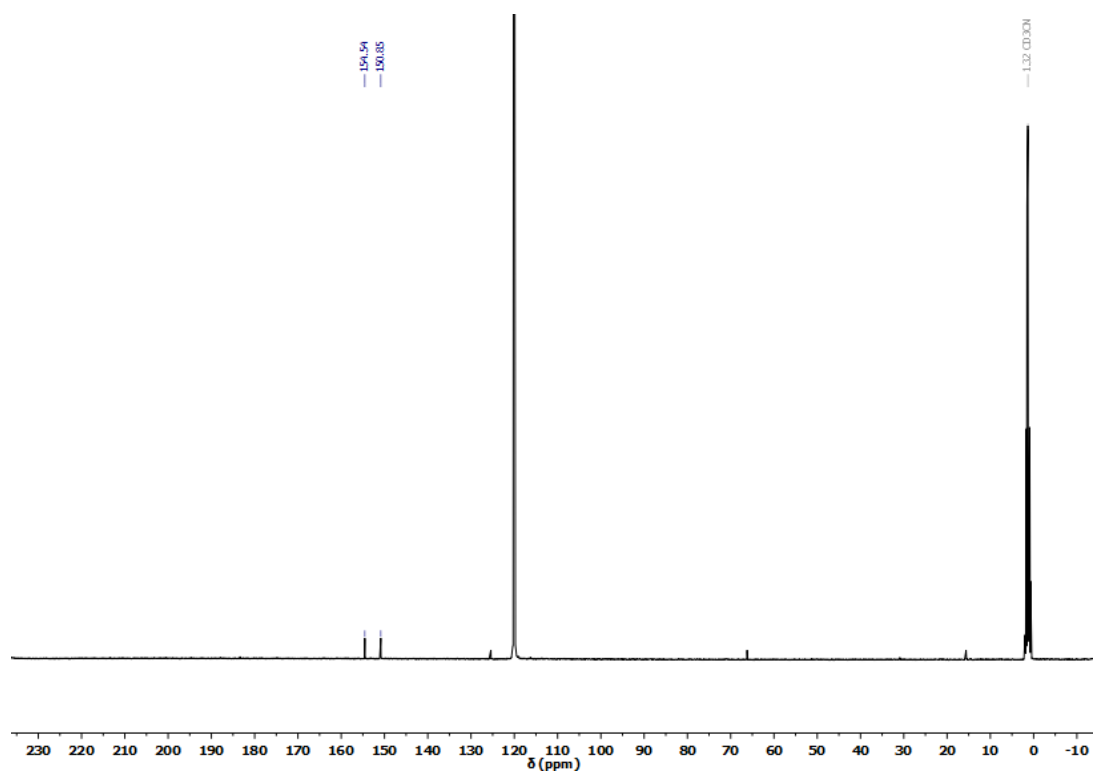
$^{19}\text{F}\{^1\text{H}\}$ NMR



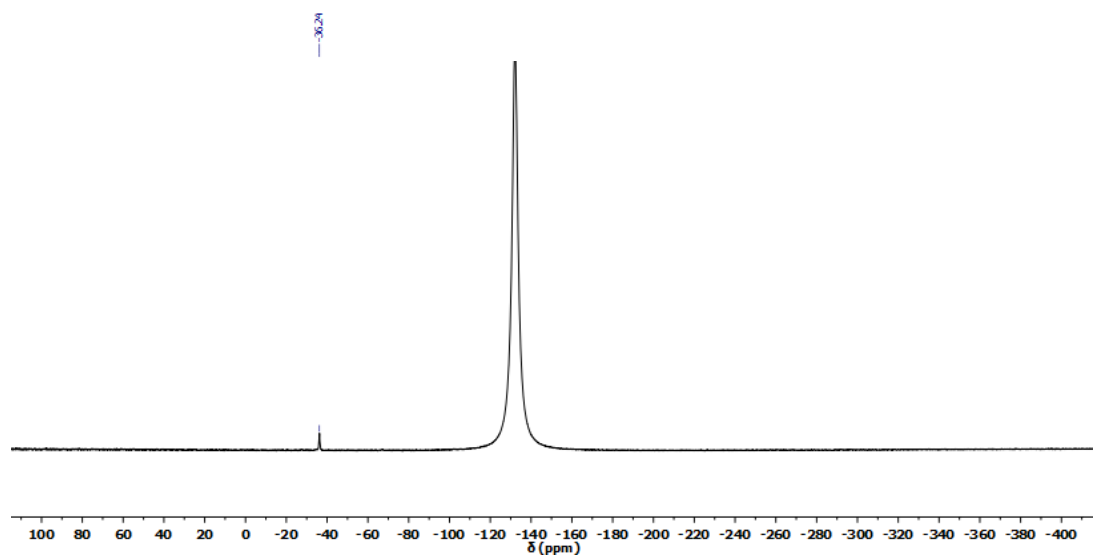
^{19}F NMR



¹³C NMR

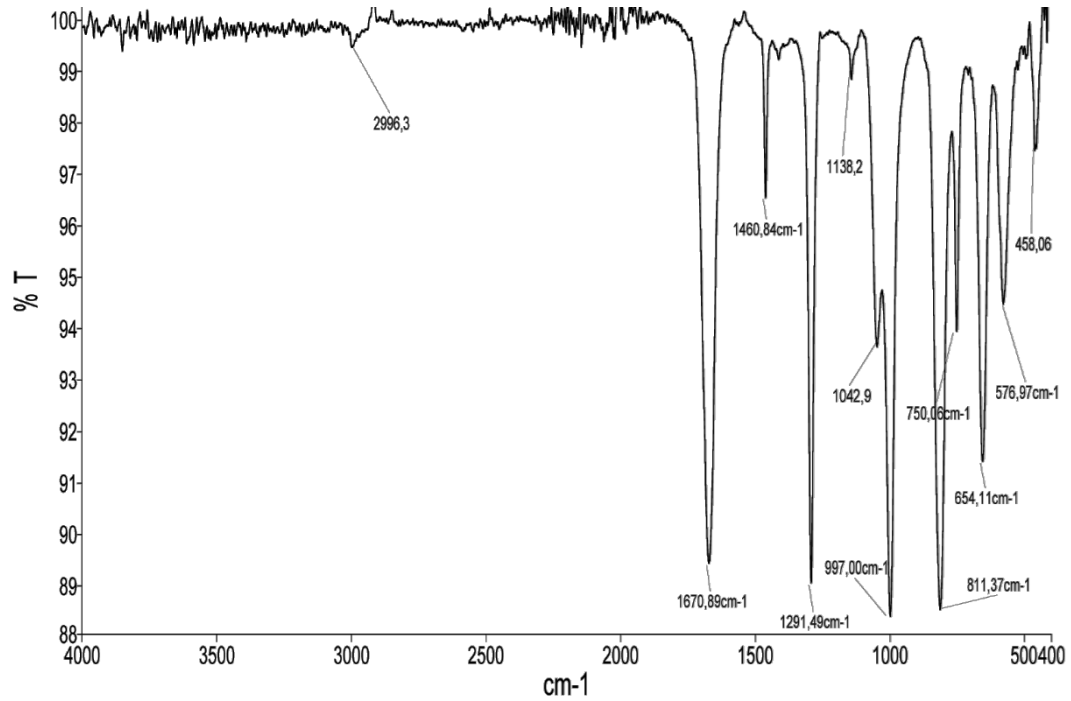


¹⁴N NMR

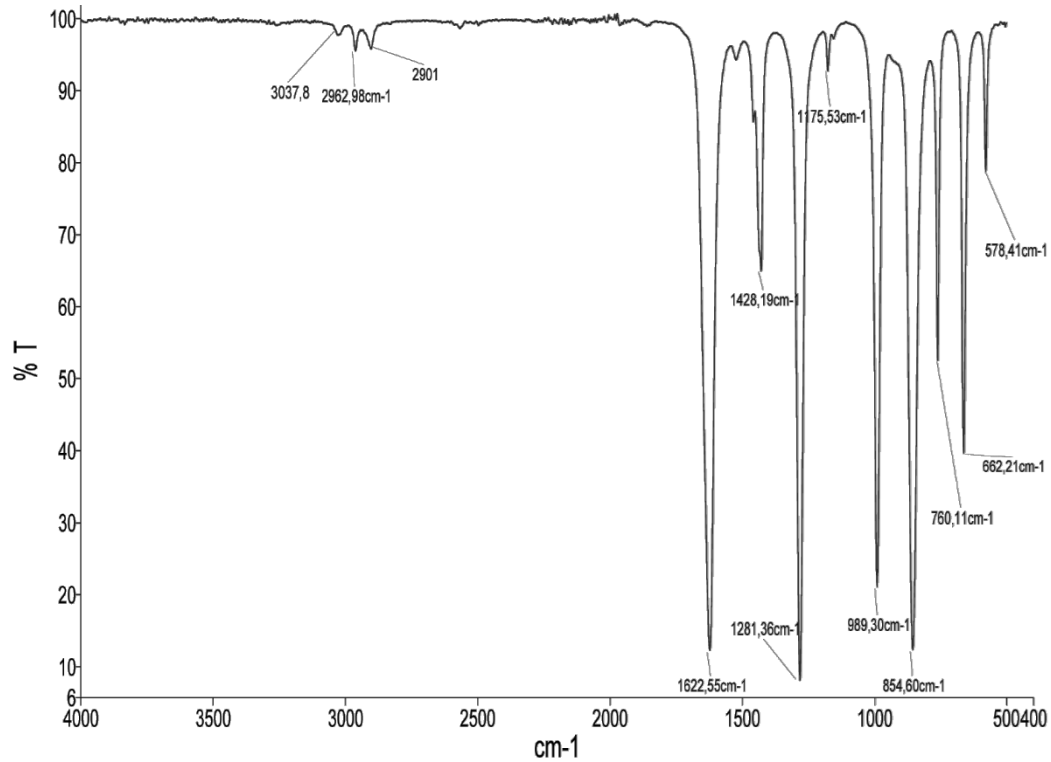


1.4. IR spectra

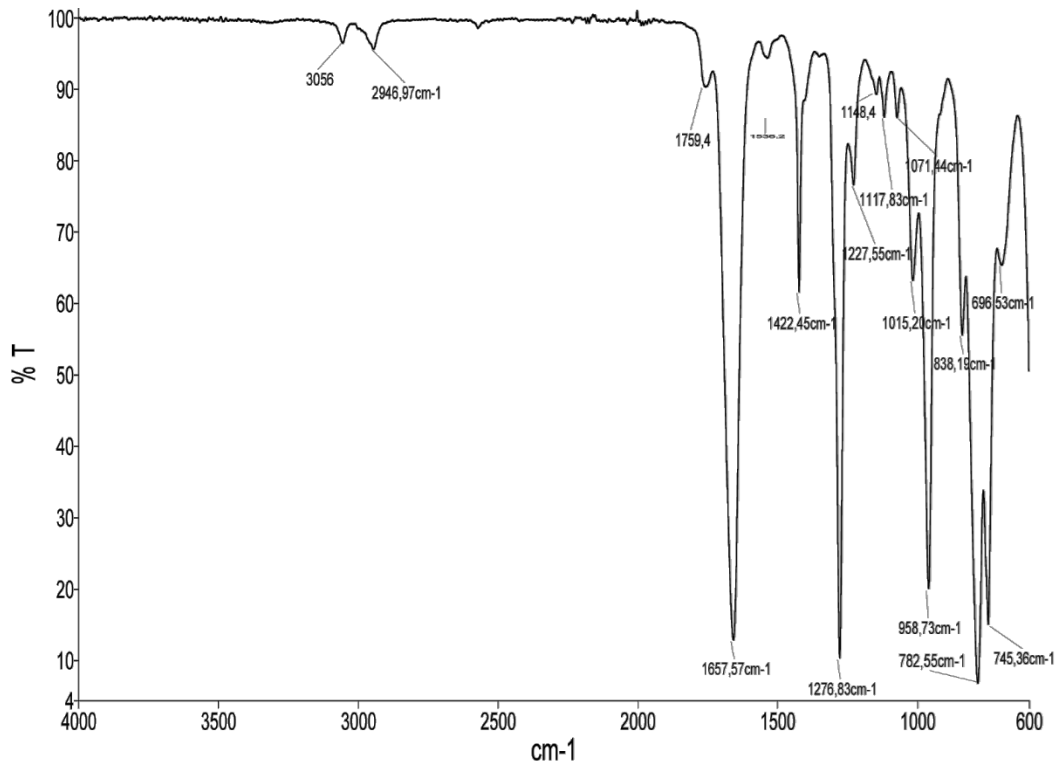
1.4.1. IR spectrum (FMN)



1.4.2. IR spectrum (MN)

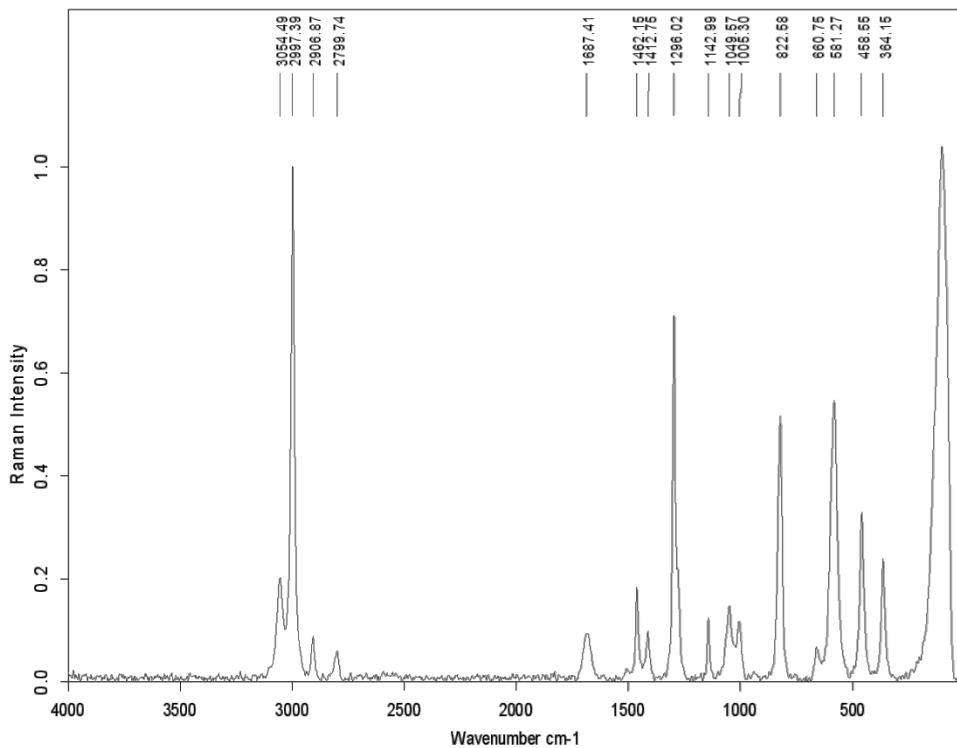


1.4.3. IR spectrum (MDN)

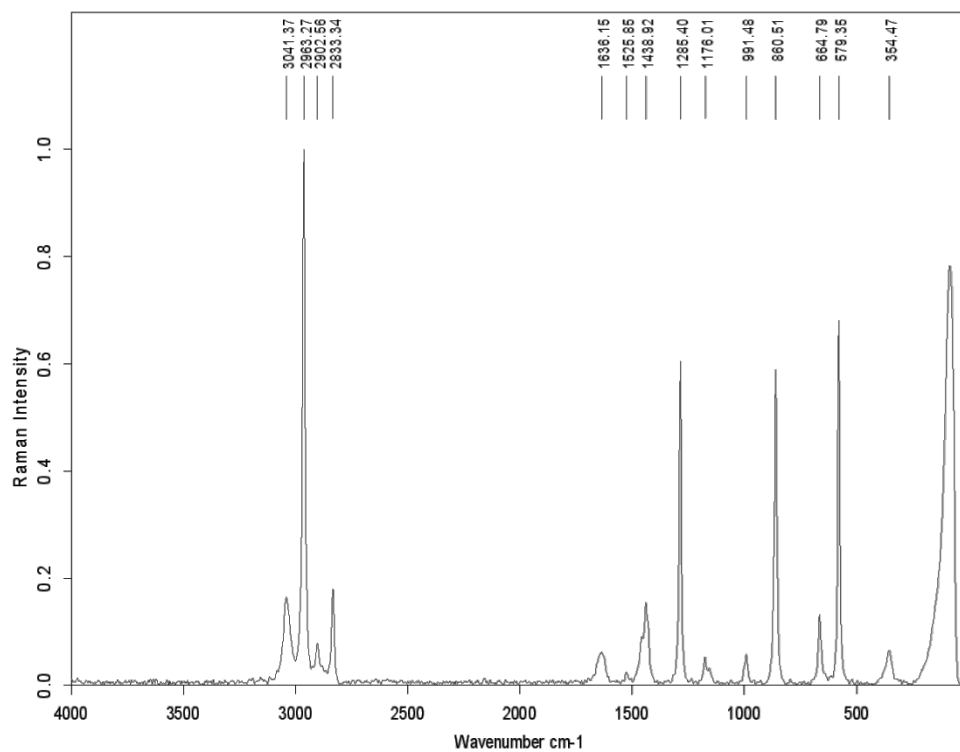


1.5. Raman spectra

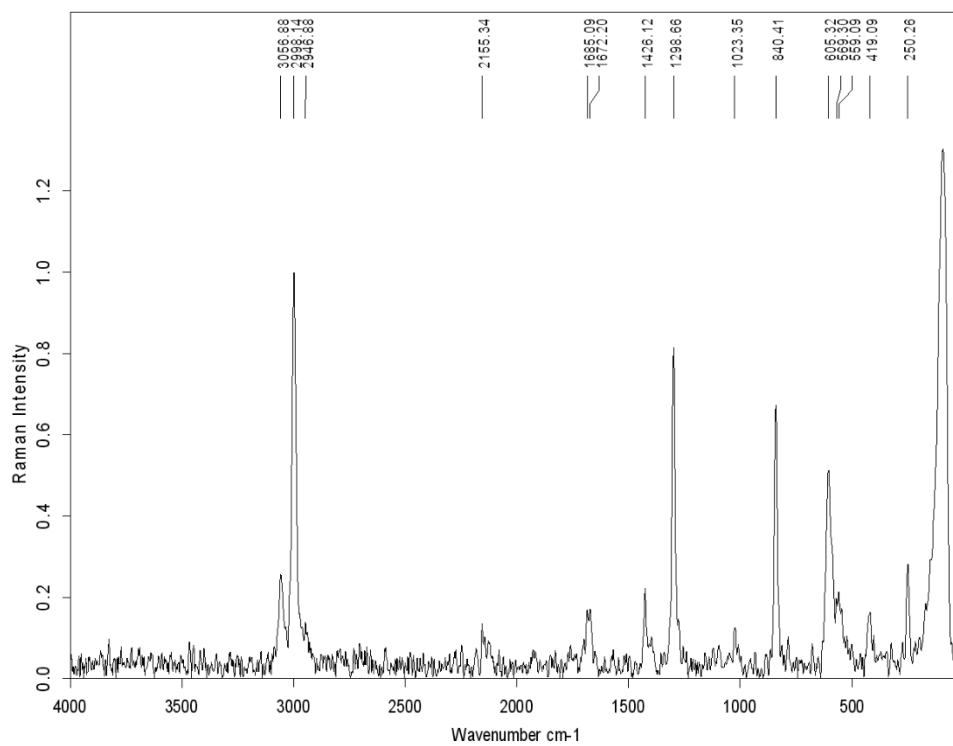
1.5.1. Raman spectrum (FMN)



1.5.2. Raman spectrum (MN)



1.5.3. Raman spectrum (MDN)



2. Calculations

2.1. Theory

2.1.1. Enthalpy of formation

Using the atomization energy method, based on the atomization energies in Table 1, the enthalpy of formation of the molecule in the gas phase can first be calculated.^[3]

$$\Delta H_{f(gas,298K,Molecule)}^{\circ} = H_{(Molecule,298K)} - \sum n \cdot H^{\circ}_{(Atom,298K)} + \sum n \cdot \Delta H_{f(Atom,298K)}^{\circ}$$

$\Delta H_{f(gas,298K,Molecule)}^{\circ}$ = Enthalpy of formation of the gas phase species molecule

$H_{Molecule,298K}$

= Total energy of the gas phase (formation from atomic nuclei and electrons)

$H^{\circ}_{(Atom,298K)}$ = CBS – 4M electronic enthalpies

$\Delta H_{f(Atom,298K)}^{\circ}$ = Standard enthalpy of formation of gaseous atoms

n = atomic number

Table 1. CBS-4M electronic enthalpies and literature-known standard enthalpies of formation of gaseous atoms

	$H^{\circ}_{(Atom,298K)}$ [a.u.]	$\Delta H_{f(Atom,298K)}^{\circ}$ [kJ mol ⁻¹]
H	-0.500991	217.998
C	-37.786156	716.68
N	-54.522462	472.68
O	-74.991202	249.18
F	-99.649394	79.38

2.1.2. Enthalpy of sublimation / vaporization

In order to obtain the energy of formation at the condensed (liquid/ solid) phase, the corresponding enthalpy of sublimation must first be calculated (Trouton's Rule).^[4]

$$\Delta H_v^{\circ} = 90 \cdot T_{boil}$$

ΔH_v° = Enthalpy of vaporisation

T_{boil} = Boiling point of the compound

2.1.3. Heat of formation (Enthalpy of formation)

The heat of formation of the compound results from the subtraction of the heat of formation vaporization from the heat of formation of the gas phase species.^[4]

$$\Delta H_{f(liquid)}^{\circ} = \Delta H_{f(gas,298K,Molecule)}^{\circ} - \Delta H_v^{\circ}$$

$\Delta H_{f(liquid)}^{\circ}$ = Heat of formation of the liquid product

2.2. Heat of formation calculation results

The results of the calculation for the heat of formation are shown in Table 2. The theoretical value of MN is in good agreement compared to the experimentally determined value of ΔH_f° (liquid) of MN ($-156.3 \text{ kJ mol}^{-1}$).^[5]

Table 2. Heat of formation calculation results

M	$H_{(\text{molecule}, 298\text{K})}$ [a.u.]	ΔH_f° (gas, 298K, molecule) [kJ mol ⁻¹]	ΔH_v° [kJ mol ⁻¹]	ΔH_f° (liquid) [kJ mol ⁻¹]	Δn	ΔU_f° [kJ mol ⁻¹]
FMN	-418.994048	-331.9	29.8	-361.7	-3.5	-353.1
MN	-319.822235	-131.8	30.4	-162.3	-3.5	-153.6

2.3. EXPLO05 calculation results

2.3.1. Results for FMN

Reactant information: FMN, 100 %, C₁ H₂ N₁ O₃ F

Molecular weight	95.03
Density of explosive	1.28 g/cm ³
Oxygen balance	8.41778 %
Enthalpy of formation	-3806.13 kJ/kg
Internal energy of formation	-3714.83 kJ/kg
Detonation parameters (at the C-J point) :	
Heat of detonation	-4449.915 kJ/kg
Detonation temperature	3827.314 K
Detonation pressure	12.29527 GPa
Detonation velocity	6132.644 m/s
Particle velocity	1566.32 m/s
Sound velocity	4566.323 m/s
Density of products	1.71906 g/cm ³
Volume of products	0.5817133 cm ³ /g
Exponent 'Gamma'	2.915319
Moles of gaseous products	3.251744 mol/mol explosive
Moles of condensed products	0 mol/mol explosive
Volume of gas at STP	836.8284 dm ³ /kg
Mean molecular mass of gas. prod.	29.2243 g/mol
Mean molecular mass of cond.prod.	12.011 g/mol
Mean molecular mass of all prod.	29.2243 g/mol
Entropy of products	7.15572 kJ/kg K
Internal energy of products	5676.604 kJ/kg, i.e. 7.266053 kJ/cm ³
Compression energy	1226.689 kJ/kg, i.e. 1.570162 kJ/cm ³
Total heat energy	-4449.9151 kJ/kg, i.e. -5.69589 kJ/cm ³

Composition of detonation products:

Products	mol/mol	mol/kg	Mol %
HF	0.9892425	10.40968	30.42191
CO ₂	0.9786295	10.298	30.09553
H ₂ O	0.5026178	5.288989	15.45687
N ₂	0.4798901	5.049828	14.75793
O ₂	0.2335356	2.457467	7.181857
CO	0.02864648	0.3014435	0.8809574
NO	0.01903141	0.2002653	0.5852679
O	0.00586574	0.06172444	0.1803874
NFO	0.00557624	0.05867814	0.1714847
NO ₂	0.00311801	0.03281048	0.0958874
OH	0.00214027	0.02252176	0.06581901
CH ₂ O ₂	0.00119556	0.01258075	0.03676677
FO	0.00103945	0.01093796	0.03196578
H ₂	0.00043724	0.00460101	0.01344627
CF ₄	0.00041397	0.00435614	0.01273064
CFO	0.00010483	0.00110308	0.00322372
H	0.00010304	0.00108424	0.00316864
HFO	6.05E-05	0.00063662	0.0018605
F ₂	4.30E-05	0.00045231	0.00132187
N ₂ O	4.17E-05	0.00043851	0.00128153
NH ₃	5.25E-06	5.52E-05	0.00016144
N	2.23E-06	2.35E-05	6.87E-05
NF	2.09E-06	2.19E-05	6.41E-05
CNO	4.86E-07	5.11E-06	1.49E-05
HCN	2.81E-07	2.96E-06	8.66E-06
CHNO	1.03E-07	1.08E-06	3.16E-06
CH ₂ F ₂	9.35E-08	9.83E-07	2.87E-06
CF ₂ O	3.85E-08	4.05E-07	1.18E-06
CF ₂	8.85E-09	9.31E-08	2.72E-07
CFN	2.82E-09	2.97E-08	8.67E-08
CF	1.63E-10	1.71E-09	5.01E-09
CH ₃ OH	1.03E-10	1.08E-09	3.17E-09

Running parameters:

- Equation of state: BKW EOS
- 'BKWN' set of constants
- Covolumes set 1 (Alpha=0.5, Beta=0.38, Kappa=9.32, Theta=4120)
- Activity: Model 1: Condensed products form pure phase (Default)

2.3.2. Results for MN

Reactant information: MN, 100 %, C₁ H₃ N₁ O₃

Molecular weight	77.04
Density of explosive	1.21 g/cm ³
Oxygen balance	-10.3837 %
Enthalpy of formation	-2106.73 kJ/kg
Internal energy of formation	-1994.11 kJ/kg
Detonation parameters (at the C-J point):	
Heat of detonation	-6020.894 kJ/kg
Detonation temperature	4151.1 K
Detonation pressure	14.16645 GPa
Detonation velocity	6652.552 m/s
Particle velocity	1759.897 m/s
Sound velocity	4892.655 m/s
Density of products	1.645239 g/cm ³
Volume of products	0.6078143 cm ³ /g
Exponent 'Gamma'	2.780081
Moles of gaseous products	2.909729 mol/mol explosive
Moles of condensed products	5.163047E-12 mol/mol explosive
Volume of gas at STP	923.6923 dm ³ /kg
Mean molecular mass of gas. prod.	26.47651 g/mol
Mean molecular mass of cond.prod.	12.011 g/mol
Mean molecular mass of all prod.	26.47651 g/mol
Entropy of products	8.351068 kJ/kg K
Internal energy of products	7569.523 kJ/kg, i.e. 9.159123 kJ/cm ³
Compression energy	1548.629 kJ/kg, i.e. 1.873842 kJ/cm ³
Total heat energy	-6020.894 kJ/kg, i.e. -7.285282 kJ/cm ³

Composition of detonation products:

Products	mol/mol	mol/kg	Mol %
H ₂ O	1.370607	17.79107	47.10427
CO ₂	0.5459073	7.086115	18.76145
N ₂	0.4969358	6.450445	17.07842
CO	0.3687748	4.786858	12.67385
H ₂ O ₂	0.08433607	1.094719	2.898417
H ₂	0.03632341	0.4714938	1.248343
NH ₃	0.00513521	0.06665727	0.1764841
H	0.00081916	0.01063305	0.02815243
HCN	0.00060218	0.00781662	0.02069554
NH ₂	9.71E-05	0.00126092	0.00333844
NO ₂	6.62E-05	0.00085876	0.00227369
CNO	3.38E-05	0.00043863	0.00116132
CH ₄	2.13E-05	0.00027611	0.00073104
CH ₂ O	2.01E-05	0.00026104	0.00069114
CHNO	1.93E-05	0.0002504	0.00066296
CH ₃ OH	1.68E-05	0.00021798	0.00057712
N	6.38E-06	8.28E-05	0.00021916
N ₂ O	3.94E-06	5.11E-05	0.00013543
N ₂ H ₄	2.63E-06	3.41E-05	9.04E-05
C ₂ H ₄	9.51E-07	1.23E-05	3.27E-05
C ₂ H ₆	8.40E-08	1.09E-06	2.89E-06
C(gr)	2.83E-12	3.67E-11	9.72E-11
C(d)	2.34E-12	3.03E-11	8.03E-11

Running parameters:

- Equation of state: BKW EOS
- 'BKWN' set of constants
- Covolumes set 1 (Alpha=0.5, Beta=0.38, Kappa=9.32, Theta=4120)
- Activity: Model 1: Condensed products form pure phase (Default)

2.3.3. Results for NG

Reactant information: Nitroglycerine (NG), 100 %, $C_3 H_5 N_3 O_9$

Molecular weight	227.09
Density of explosive	1.6 g/cm ³
Oxygen balance	3.52269 %
Enthalpy of formation	-1632.76 kJ/kg
Internal energy of formation	-1539.98 kJ/kg
Detonation parameters (at the C–J point) :	
Heat of detonation	-6099.163 kJ/kg
Detonation temperature	4316.724 K
Detonation pressure	23.73653 GPa
Detonation velocity	7850.276 m/s
Particle velocity	1889.785 m/s
Sound velocity	5960.492 m/s
Density of products	2.107283 g/cm ³
Volume of products	0.4745447 cm ³ /g
Exponent 'Gamma'	3.154059
Moles of gaseous products	7.26082 mol/mol explosive
Moles of condensed products	0 mol/mol explosive
Volume of gas at STP	781.9567 dm ³ /kg
Mean molecular mass of gas. prod.	31.27573 g/mol
Mean molecular mass of cond.prod.	0 g/mol
Mean molecular mass of all prod.	31.27573 g/mol
Entropy of products	7.165994 kJ/kg K
Internal energy of products	7884.813 kJ/kg. i.e. 12.6157 kJ/cm ³
Compression energy	1785.651 kJ/kg. i.e. 2.857041 kJ/cm ³
Total energy of detonation	-6099.163 kJ/kg. i.e. -9.75866 kJ/cm ³

Composition of detonation products:

Products	mol/mol	mol/kg	Mol %
CO ₂	2.854252 E00	1.256909 E01	39.3103
H ₂ O	2.436451 E00	1.072925 E01	33.5561
N ₂	1.468932 E00	6.468644 E00	20.2309
O ₂	2.809613 E-01	1.237252 E00	3.8696
CO	8.584561 E-02	3.780330 E-01	1.1823
CH ₂ O ₂	5.988686 E-02	2.637200 E-01	0.8248
NO	4.629133 E-02	2.038502 E-01	0.6375
NO ₂	1.536168 E-02	6.764727 E-02	0.2116
O	7.806584 E-03	3.437737 E-02	0.1075
OH	2.554218 E-03	1.124785 E-02	0.0352
H ₂	1.997825 E-03	8.797699 E-03	0.0275
NH ₃	2.185473 E-04	9.624031 E-04	0.0030
N ₂ O	1.164172 E-04	5.126593 E-04	0.0016
H	1.121857 E-04	4.940254 E-04	0.0015
N	1.650913 E-05	7.270021 E-05	0.0002
CNO	1.019812 E-05	4.490884 E-05	0.0001
HCN	5.271434 E-06	2.321348 E-05	0.0001
N ₂ H ₄	7.717688 E-08	3.398590 E-07	0.0000
CH ₃ OH	2.566241 E-08	1.130080 E-07	0.0000

Running parameters:

- Equation of state: BKW EOS
- 'BKWN' standard set of constants
- Covolumes set 1 (Alpha=0.5, Beta=0.38, Kappa=9.4, Theta=4120)
- Activity: Model 1: Condensed products form pure phase (Default)

2.4. Calculations for structure determination

The conformational landscape of MN and FMN were elucidated using molecular structures of MN and FMN were optimized with the Gaussian 09 program suite^[6] using different DFT functionals (B3LYP, B3PW91, M06-2X, PBE0, TPSSh) in combination with Ahlrichs' def2-TZVP basis set, and using second order perturbation theory (MP2) in combination with Dunning's cc-pVTZ for frozen core calculations (fc) and cc-pwCVTZ for calculations with all electrons correlated. The stationary points were located with the Berny algorithm using redundant internal coordinates. Analytical Hessians were computed to determine the nature of stationary points (zero imaginary frequencies for minima). Cubic force fields were calculated at all of the DFT levels mentioned above.

According to these calculations, for MN only the *anti*-conformer of C_s symmetry is a minimum on the potential hypersurface, whereas for FMN the calculations suggest the existence of two minima, one *anti* conformer of C_s symmetry and one asymmetric *gauche* conformer. The two dimensional scan of the FCON and CONO dihedral angles is shown in the Figure below, calculated relative energies of these are listed in Table 11.

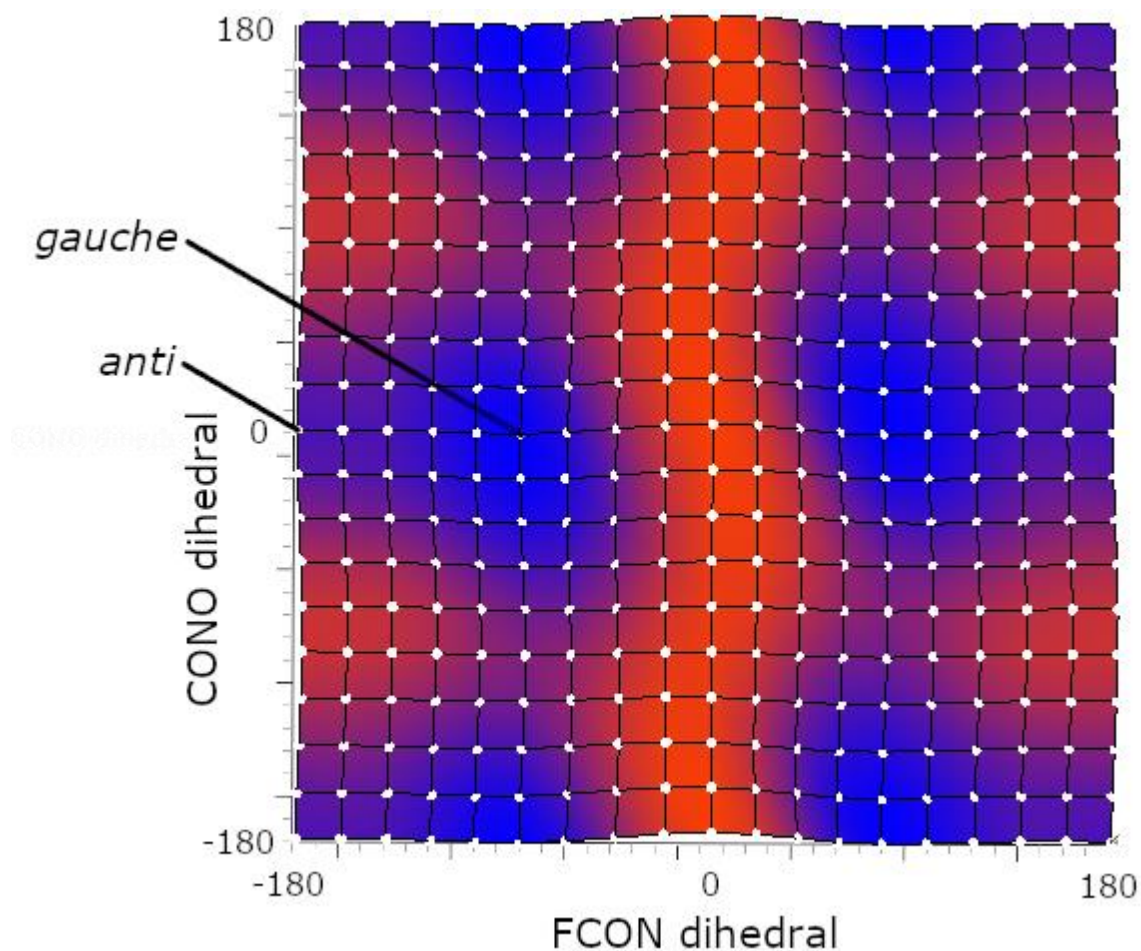


Table 3. Relative electronic (ΔE) and Gibbs free energies (ΔG) in kJ mol^{-1} of the two possible conformers of FMN. Negative values indicate energetic preference for the *gauche*-conformer.

	ΔE	$\Delta G_{298\text{ K}}$
B3LYP-D3/def2-TZVP	-18.5	-17.1
B3PW91-D3/def2-TZVP	-17.8	-16.6
M06-2X/def2-TZVP	-15.6	-14.5
MP2(fc)/cc-pVTZ	-19.1	-18.4
MP2(full)/cc-pwCVTZ	-19.2	-18.5
PBE0-D3/def2-TZVP	-17.1	-16.0
TPSSh/def2-TZVP	-18.4	-17.3

2.4.1. Calculated Cartesian Coordinates of MN

B3LYP-D3/def2-TZVP $v_{\min} = 140 \text{ cm}^{-1}$ $E = -320.3406699$

C -0.142295 -1.756870 0.000000
O 0.708840 -0.601033 0.000000
N 0.000000 0.623880 0.000000
O 0.722249 1.576915 0.000000
O -1.203223 0.565029 0.000000
H 0.561107 -2.586144 0.000000
H -0.765129 -1.783540 -0.892521
H -0.765129 -1.783540 0.892521

B3PW91-D3/def2-TZVP $v_{\min} = 145 \text{ cm}^{-1}$ $E = -320.2168415$

C 0.706633 -0.593143 0.000000
O -0.137915 -1.743591 0.000000
N 0.000000 0.617667 0.000000
O 0.715752 1.571254 0.000000
O -1.199013 0.554235 0.000000
H 0.564938 -2.574555 0.000000
H -0.762211 -1.773169 -0.892848
H -0.762211 -1.773169 0.892848

M06-2X/def2-TZVP $v_{\min} = 141 \text{ cm}^{-1}$ $E = -320.1957239$

C -1.743609 -0.004963 0.000000
O -0.522513 -0.746131 0.000000
N 0.607488 0.045685 0.000000
O 1.618805 -0.579515 0.000000
O 0.448350 1.233221 0.000000
H -2.508036 -0.776600 -0.000011
H -1.819925 0.612994 -0.891909
H -1.819934 0.612978 0.891919

MP2 (fc)/cc-pVTZ $v_{\min} = 146 \text{ cm}^{-1}$ $E = -319.6982628$

C -1.741774 -0.006503 0.000002
O -0.531845 -0.768576 -0.000003
N 0.612747 0.053058 -0.000003
O 1.636808 -0.580751 0.000003
O 0.433638 1.250255 0.000000
H -2.517085 -0.765080 0.000008
H -1.815155 0.612633 -0.889352
H -1.815145 0.612636 0.889354

MP2 (full)/cc-pwCVTZ $v_{\min} = 146 \text{ cm}^{-1}$ $E = -319.9679348$

C -1.738465 -0.006354 0.000002
O -0.531407 -0.766135 -0.000003
N 0.612080 0.052920 -0.000002
O 1.632944 -0.580195 0.000003
O 0.433972 1.247194 0.000000
H -2.512918 -0.763089 0.000008
H -1.812472 0.611928 -0.887636
H -1.812462 0.611932 0.887638

PBE0-D3/def2-TZVP $v_{\min} = 147 \text{ cm}^{-1}$ $E = -319.9950741$

C -1.741623 -0.004342 0.000001
O -0.527709 -0.748377 -0.000002
N 0.610694 0.048158 0.000001
O 1.619151 -0.583279 0.000001
O 0.450055 1.235407 -0.000001
H -2.511996 -0.773240 -0.000012
H -1.822547 0.616097 -0.892579
H -1.822555 0.616075 0.892596

TPSSH/def2-TZVP $v_{\min} = 145 \text{ cm}^{-1}$ $E = -320.3413971$

C -0.147932 -1.753798 0.000000
O 0.718035 -0.605506 0.000000
N 0.000000 0.625612 0.000000
O 0.722523 1.582169 0.000000
O -1.205855 0.557537 0.000000
H 0.550386 -2.589134 0.000000
H -0.770208 -1.770482 -0.894648
H -0.770208 -1.770482 0.894648

2.4.2. Calculated Cartesian Coordinates of FMN

B3LYP-D3/def2-TZVP *gauche* $v_{\min} = 83 \text{ cm}^{-1}$ $E = -419.6235876$

C	1.331435	-0.209463	0.498826
O	0.118982	-0.846498	0.218478
N	-1.004735	0.070415	0.009661
O	-1.977411	-0.509019	-0.349704
O	-0.810187	1.229775	0.229345
F	1.915972	0.235727	-0.660040
H	1.953134	-0.992899	0.931125
H	1.196582	0.641162	1.163691

B3LYP-D3/def2-TZVP *anti* $v_{\min} = 61 \text{ cm}^{-1}$ $E = -419.6165405$

C	-1.238394	0.419756	0.000004
O	-0.196550	-0.572570	0.000009
N	1.100783	-0.011633	0.000010
O	1.964968	-0.832493	-0.000008
O	1.170601	1.193478	-0.000005
F	-2.379873	-0.310064	-0.000008
H	-1.184201	1.023077	-0.905467
H	-1.184215	1.023070	0.905480

B3PW91-D3/def2-TZVP *gauche* $v_{\min} = 85 \text{ cm}^{-1}$ $E = -419.4623719$

C	1.321003	-0.211700	0.495656
O	0.110147	-0.840728	0.210485
N	-0.996120	0.069740	0.009345
O	-1.972295	-0.501863	-0.343618
O	-0.796416	1.225551	0.225280
F	1.910375	0.231258	-0.652671
H	1.936486	-0.999901	0.931778
H	1.185471	0.636917	1.165737

B3PW91-D3/def2-TZVP *anti* $v_{\min} = 67 \text{ cm}^{-1}$ $E = -419.4555812$

C	-1.229001	0.415132	0.000004
O	-0.191092	-0.571641	0.000009
N	1.091060	-0.011756	0.000011
O	1.957322	-0.825817	-0.000008
O	1.156076	1.189774	-0.000006
F	-2.366151	-0.309982	-0.000008
H	-1.173243	1.021407	-0.905586
H	-1.173257	1.021400	0.905600

M06-2X/def2-TZVP *gauche* $v_{\min} = 88 \text{ cm}^{-1}$ $E = -419.450253$

C	1.318338	-0.262226	0.480570
O	0.086598	-0.851741	0.172140
N	-0.972438	0.066863	0.015315
O	-1.971062	-0.457528	-0.341596
O	-0.744194	1.210996	0.258846
F	1.865019	0.274112	-0.639245
H	1.931398	-1.094954	0.819285
H	1.209733	0.519457	1.228166

M06-2X/def2-TZVP *anti* $v_{\min} = 85 \text{ cm}^{-1}$ $E = -419.4443139$

C	-1.224008	0.417674	-0.000001
O	-0.183203	-0.566052	-0.000004
N	1.078736	-0.014904	-0.000013
O	1.948934	-0.819599	0.000008
O	1.145355	1.184441	0.000005
F	-2.351058	-0.314760	0.000005
H	-1.168139	1.020399	-0.904799
H	-1.168132	1.020402	0.904793

MP2(fc)/cc-pVTZ *gauche* $v_{\min} = 88 \text{ cm}^{-1}$ $E = -418.8311737$

C	1.316669	-0.255769	0.482448
O	0.102541	-0.874769	0.178932
N	-0.986851	0.077514	0.014379
O	-1.990625	-0.468957	-0.342766
O	-0.744664	1.230412	0.254759
F	1.882632	0.268910	-0.642471
H	1.940255	-1.063535	0.853317
H	1.185984	0.541866	1.206178

MP2(fc)/cc-pVTZ *anti* $v_{\min} = 80 \text{ cm}^{-1}$ $E = -418.8239176$

C	-1.221605	0.408816	0.000002
O	-0.193192	-0.588938	0.000005
N	1.088751	-0.008079	0.000005
O	1.971704	-0.822660	-0.000004
O	1.136317	1.203917	-0.000003
F	-2.365747	-0.306489	-0.000004
H	-1.159261	1.011749	-0.901221
H	-1.159269	1.011746	0.901227

MP2(full)/cc-pwCVTZ *gauche* $v_{\min} = 88 \text{ cm}^{-1}$ $E = -419.1618758$

C	1.314524	-0.250856	0.482286
O	0.104027	-0.870708	0.183369
N	-0.985951	0.077044	0.014130
O	-1.984667	-0.471504	-0.343392
O	-0.747434	1.227888	0.252491
F	1.879770	0.264860	-0.643531
H	1.937563	-1.053605	0.859919
H	1.183613	0.550282	1.199493

MP2(full)/cc-pwCVTZ *anti* $v_{\min} = 78 \text{ cm}^{-1}$ $E = -419.1545618$

C	-1.219565	0.407861	0.000002
O	-0.193161	-0.586590	0.000005
N	1.087118	-0.008158	0.000005
O	1.966993	-0.821499	-0.000004
O	1.135289	1.200811	-0.000003
F	-2.361179	-0.305889	-0.000004
H	-1.157391	1.010584	-0.899289
H	-1.157399	1.010580	0.899295

PBE0-D3/def2-TZVP_gauche $v_{\min} = 87 \text{ cm}^{-1}$ $E = -419.1887742$

C	1.315284	-0.223131	0.491512
O	0.100702	-0.839277	0.198418
N	-0.986637	0.068695	0.010454
O	-1.969037	-0.489514	-0.340158
O	-0.779211	1.220463	0.229917
F	1.898165	0.237521	-0.646361
H	1.926518	-1.024552	0.909301
H	1.185117	0.611410	1.180282

PBE0-D3/def2-TZVP_anti $v_{\min} = 73 \text{ cm}^{-1}$ $E = -419.1822466$

C	1.291700	-0.011693	0.000000
O	0.000000	0.598542	0.000000
N	-1.033240	-0.325850	0.000000
O	-2.109846	0.172461	0.000000
O	-0.720146	-1.485105	0.000000
F	2.140750	1.030663	0.000000
H	1.427827	-0.606020	-0.90534
H	1.427827	-0.606020	0.90534

TPSSh/def2-TZVP_gauche $v_{\min} = 84 \text{ cm}^{-1}$ $E = -419.6209576$

C	1.330206	-0.199701	0.502865
O	0.124830	-0.852851	0.221628
N	-1.010561	0.072622	0.008092
O	-1.984011	-0.513550	-0.347162
O	-0.811660	1.234890	0.222785
F	1.925023	0.227372	-0.661416
H	1.955434	-0.970550	0.954763
H	1.178787	0.666135	1.146142

TPSSh/def2-TZVP_anti $v_{\min} = 64 \text{ cm}^{-1}$ $E = -419.6139557$

C	-1.234234	0.418662	0.000001
O	-0.199296	-0.585051	0.000001
N	1.102886	-0.010096	-0.000004
O	1.974785	-0.827097	0.000001
O	1.157895	1.198999	0.000001
F	-2.380873	-0.308200	-0.000001
H	-1.177001	1.018846	-0.908397
H	-1.177004	1.018844	0.908402

3. Structure Determination

3.1. X-ray Crystallography

3.1.1. Crystal growth

3.1.1.1 MN

Crystals of CH_3NO_3 [MN] were grown in-situ inside of a sealed capillary. At 245 K, a small crystal could be manually grown. It turned out to be oxonium nitrate, see below. Slowly chilling with 10 K/h to 100 K methyl nitrate crystallizes as oligocrystalline material.

3.1.1.2 FMN

A twinned crystal was grown *in situ* inside of a sealed capillary at 182.5 K by manually growing a crystal seed, chilling to 162 K with 1 K/h and to 100 K with 20 K/h.

3.1.1.3. Oxonium nitrate dihydrate

A crystal of $\text{H}_3\text{O}^+ \text{NO}_3^- \times 2 \text{H}_2\text{O}$ was grown in-situ inside of a sealed capillary at 245 K. Chilling fast to 180 K the methyl nitrate acted as undercooled solvent.

3.1.2 Structure determination and refinement

All measurements were examined on a Rigaku Supernova diffractometer using $\text{MoK}\alpha$ ($\lambda = 0.71073 \text{ \AA}$) radiation. Using Olex2 [1], the structures were solved with the ShelXT [2] structure solution program using Intrinsic Phasing and refined with the ShelXL [3] refinement package using Least Squares minimization. All hydrogen atoms were refined isotropically.

3.1.2.1

For MN seven domains were indexed and taken into account for data reduction, only none or minor overlapping reflections of the main domain (quota ca. 27%) were used for structure solution and refinement.

3.1.2.2

The crystal of FMN was twinned by a rotation of 180° around 100 with ratio 58:42. Both domains were taken into account during data reduction and refinement.

Crystal data and structure refinement

	MN	FMN	H ₃ O ⁺ NO ₃ ⁻ · 2 H ₂ O
Empirical formula	CH ₃ NO ₃	CH ₂ FNO ₃	H ₇ NO ₆
Formula weight	77.04	95.04	117.07
Temperature/K	100.0(1)	100.0(1)	180.0(1)
Cryst. system	orthorhombic	monoclinic	orthorhombic
Space group	<i>Pbca</i>	<i>Cc</i>	<i>P2₁2₁2₁</i>
<i>a</i>/Å	4.6169(2)	5.0962(16)	3.48643(15)
<i>b</i>/Å	11.2184(6)	14.286(3)	9.5040(4)
<i>c</i>/Å	12.5130(7)	4.8520(10)	14.7100(5)
β/°	90	103.57(3)	90
Volume/Å³	648.10(6)	343.40(16)	487.42(3)
Z	8	4	4
ρ_{calc}/cm³	1.579	1.838	1.595
μ/mm⁻¹	0.161	0.211	0.180
<i>F</i>(000)	320	192	248
Crystal size/mm	0.51 × 0.32 × 0.27	0.63 × 0.33 × 0.27	0.24 × 0.15 × 0.10
2θ range /°	6.5 to 61.7	5.7 to 73.6	5.1 to 64.5
Index ranges	-6 ≤ <i>h</i> ≤ 6 -15 ≤ <i>k</i> ≤ 16 -17 ≤ <i>l</i> ≤ 17	-8 ≤ <i>h</i> ≤ 8 -23 ≤ <i>k</i> ≤ 23 -8 ≤ <i>l</i> ≤ 8	-5 ≤ <i>h</i> ≤ 5 -14 ≤ <i>k</i> ≤ 13 -21 ≤ <i>l</i> ≤ 21
Refl. collected	8968	13818	9655
Unique refl.	1002	3370	1638
<i>R</i>_{int}	0.0576	0.0214	0.0339
Refl. with <i>I</i> > 2σ(<i>I</i>)	764	3225	1390
Data/restraints/parameters	1002/0/59	3370/2/64	1638/0/93
Goof on <i>F</i>²	0.929	1.061	1.079
Final <i>R</i> indices [for <i>I</i> > 2σ(<i>I</i>)]	<i>R</i> ₁ = 0.0283, <i>wR</i> ₂ = 0.0645	<i>R</i> ₁ = 0.0329, <i>wR</i> ₂ = 0.1007	<i>R</i> ₁ = 0.0307, <i>wR</i> ₂ = 0.0603
Final <i>R</i> indices [for all data]	<i>R</i> ₁ = 0.0407, <i>wR</i> ₂ = 0.0670	<i>R</i> ₁ = 0.0349, <i>wR</i> ₂ = 0.1074	<i>R</i> ₁ = 0.0411, <i>wR</i> ₂ = 0.0649
Resid. electron density/ e Å⁻³	0.13/–0.20	0.36/–0.30	0.16/–0.21
Flack parameter		–0.1(5)	0.3(10)
CCDC number	1936407	1936406	1936408

1. O. V. Dolomanov, L. J. Bourhis, R. J. Gildea, J. A. K. Howard, H. Puschmann, *J. Appl. Crystallogr.* **2009**, *42*, 339–341.

2. G. M. Sheldrick, *Acta Crystallogr.* **2015**, *A71*, 3–8.

3. G. M. Sheldrick, *Acta Crystallogr.* **2015**, *C71*, 3–8.

Fig. S1 Asymmetric unit of $\text{H}_3\text{O}^+ \text{NO}_3^- \cdot 2 \text{H}_2\text{O}$

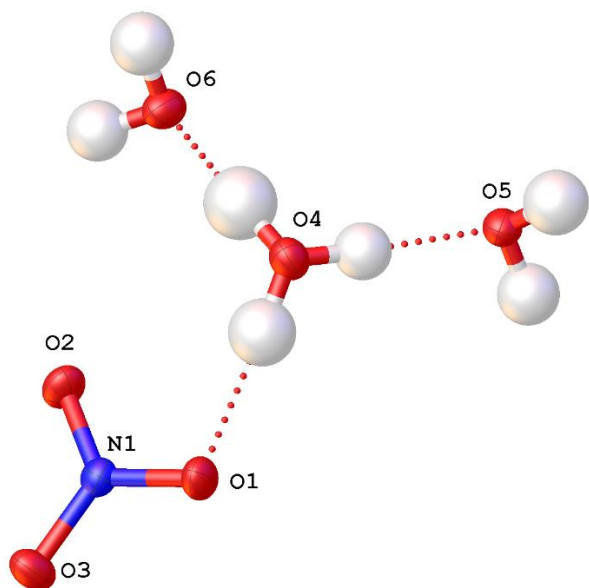
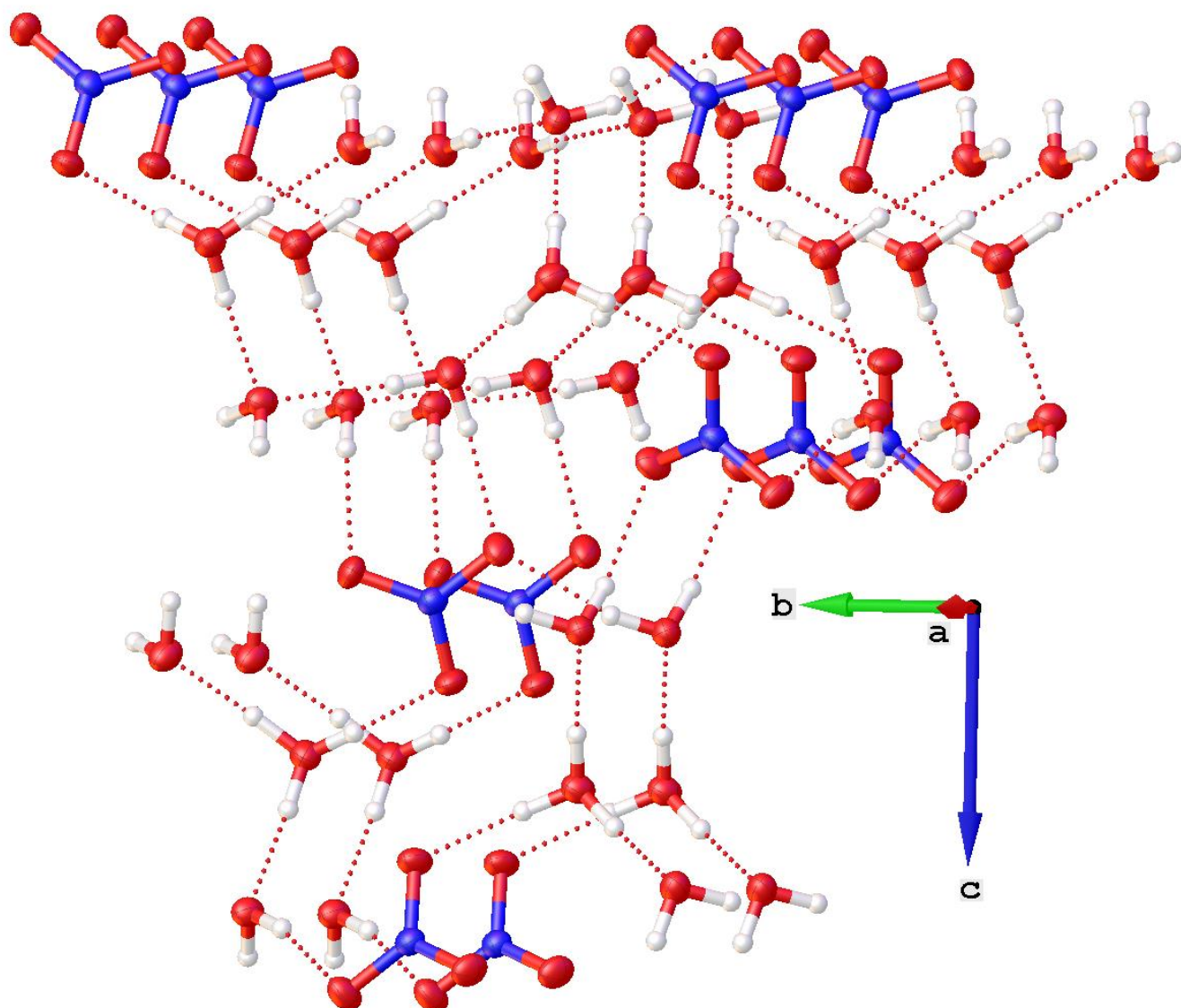


Fig. S2 Hydrogen bond network of $\text{H}_3\text{O}^+ \text{NO}_3^- \cdot 2 \text{H}_2\text{O}$



3.2. Gas-phase electron diffraction

3.2.1 Experiment

The electron diffraction patterns were recorded on the heavily improved Balzers Eldigraph KD-G2 gas-phase electron diffractometer at Bielefeld University. Experimental details are listed in Table 4, instrumental details are reported elsewhere.^[10]

Table 4. Details of the gas-phase electron diffraction experiment for methyl nitrate and fluoromethyl nitrate.

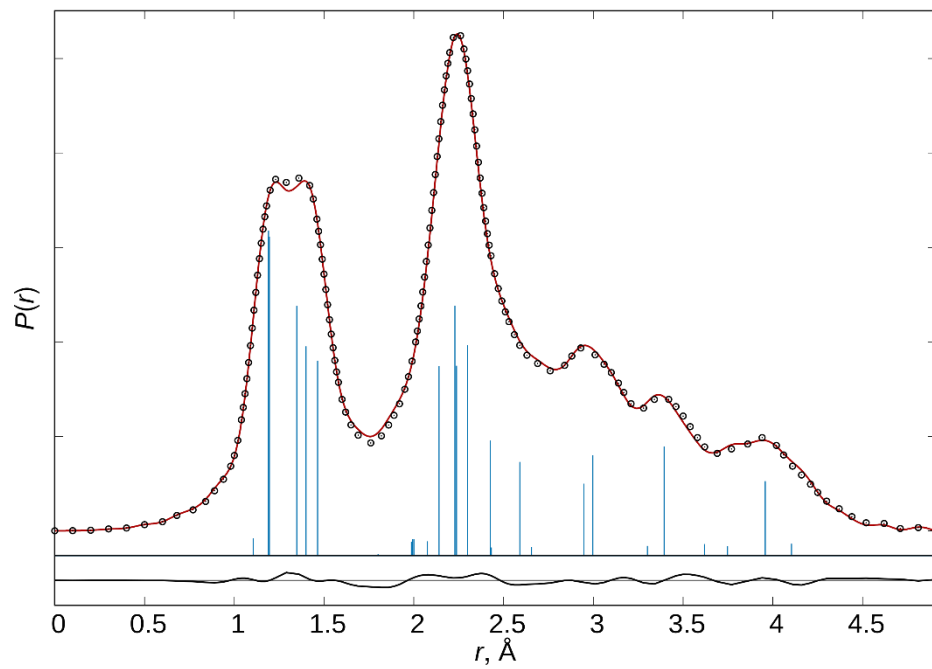
Parameters	Methyl nitrate		Fluoromethyl nitrate	
	short detector distance	long detector distance	short detector distance	long detector distance
nozzle-to-plate distance, mm	250.0	500.0	250.0	500.0
accelerating voltage, kV	60	60	60	60
fast electron current, μA	1.54	1.53	1.54	1.53
electron wavelength, ^a \AA	0.048672	0.048629	0.048672	0.048629
nozzle temperature, K	297	298	297	298
Sample pressure, ^b mbar	2.8×10^{-6}	4.2×10^{-6}	5.0×10^{-6}	4.7×10^{-6}
residual gas pressure ^c , mbar	7.0×10^{-7}	1.2×10^{-6}	7.0×10^{-7}	1.2×10^{-6}
exposure time, s	10	10	10	10
used s range, \AA^{-1}	7.4–32.2	2.0–16.4	9.2–30.0	3.0–16.0
number of inflection points ^d	7	4	7	5
R _r factor	6.3	3.2	6.9	1.9

^a Determined from CCl_4 diffraction patterns measured in the same experiment. ^b During the measurement.

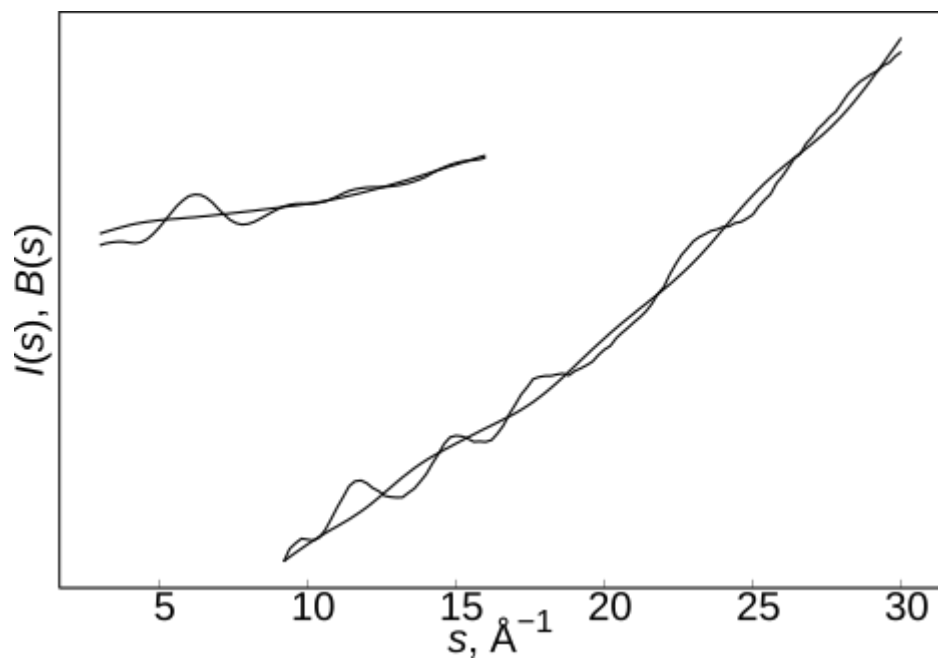
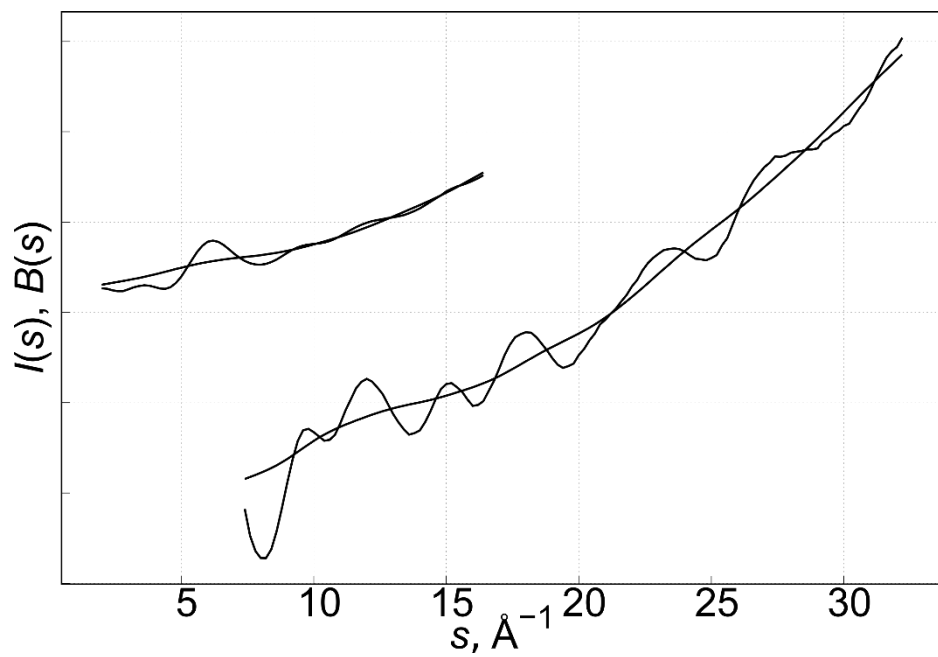
^c Between measurements. ^d Number of inflection points on the reduced background lines.

The electron diffraction patterns, four for each, long and short nozzle-to-plate distance (with the exception of only three for the medium distance for FMN) were measured on the Fuji BAS-IP MP 2025 imaging plates, which were scanned by using calibrated Fuji BAS 1800II scanner. The intensity curves (see below) were obtained by applying the method described earlier.^[11] Electron wavelengths were refined^[12] using carbon tetrachloride diffraction patterns, recorded in the same experiment as the substance under investigation.

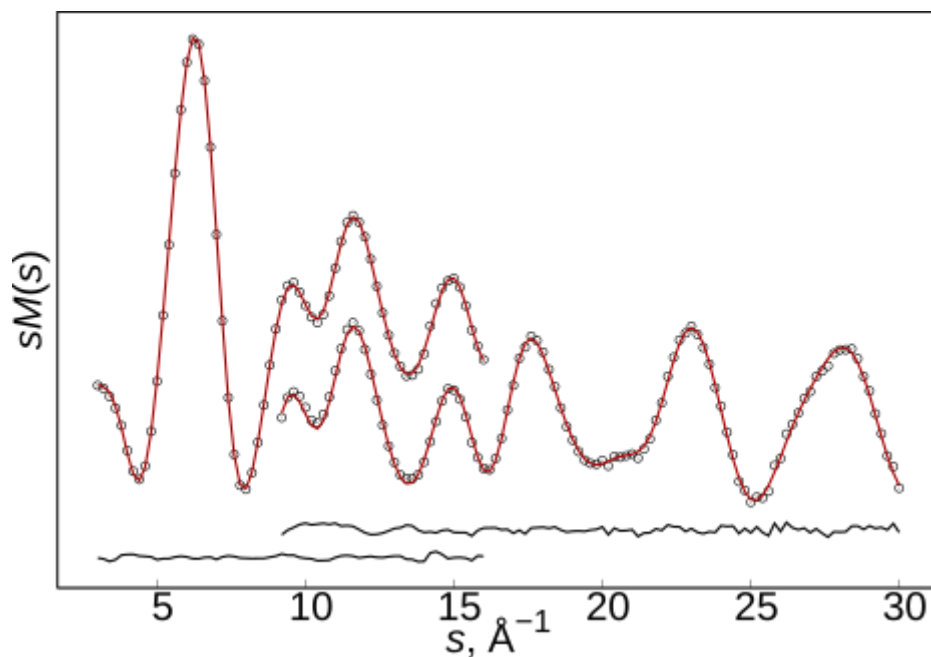
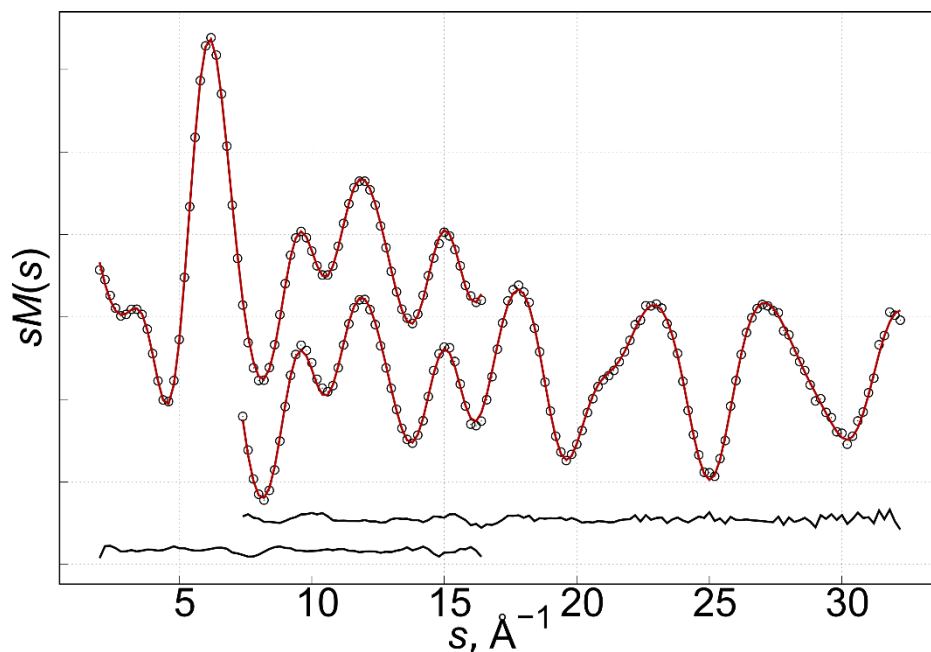
3.2.2 Experimental (black dots) and model (red line) radial distribution curve as well as difference curve (below) for the refinement of FMN. Vertical bars (blue) indicate individual diatomic contributions to the total intensity.



3.2.3 First sets of experimental reduced electron diffraction intensities and background lines of MN (top) and FMN (bottom) for middle and long camera settings.



3.2.4 Experimental and model molecular electron diffraction intensities of MN (top) and FMN (bottom) in the main refinement; in case of MN combined with rotational constants.



3.2.5 Structural Analysis of MN

Two types of experimental data were available for structural analysis: (a) electron diffraction intensities measured in this work and (b) published earlier rotational constants.^[13]

Molecular structure of methyl nitrate has been refined from published rotational constants for eight isotopologues. The parameters were refined unconstrained within C_s symmetry point group. The experimental B_0 rotational constants have been corrected to equilibrium geometry using theoretically computed differences ($B_e - B_0$) at the DFT level and VPT2 theory as implemented in

Gaussian program package.^[6] The obtained results are listed in Table 5. Interestingly, the differences between results obtained with PBE0 and TPSSh corrections were negligible, although the corrections themselves deviated by 5-10%. To assess the influence of uncertainties in corrections ($B_e - B_0$) onto the errors of refined molecular structure parameters Monte-Carlo simulations have been done as described earlier.^[14] Assumed standard deviations for rotational constants were 5% of their respective corrections. The obtained in this way total errors are provided in Table 5.

Table 5. Structural parameters of methyl nitrate (Å and degrees) refined from experimental B_0 rotational constants using theoretical corrections ($B_e - B_0$) from VPT2 calculations with PBE0 and TPSSh DFT functionals. Uncertainties are standard deviations from least squares method (LSQ) or total errors from Monte-Carlo simulations.

Parameter	PBE0/def2-TZVP, LSQ errors	TPSSh/def2-TZVP, LSQ errors	TPSSh/def2-TZVP, total errors
C1–O1	1.433(5)	1.433(5)	1.433(22)
O1–N1	1.399(8)	1.397(8)	1.397(38)
N1–O2	1.206(5)	1.205(5)	1.207(22)
N1–O3	1.203(6)	1.203(6)	1.203(29)
Average C–H	1.078(4)	1.078(4)	1.079(21)
C1–O1–N1	112.6(2)	112.5(2)	112.5(11)
O1N1O2	117.7(7)	117.8(7)	117.8(33)
O1N1O3	112.8(4)	112.7(4)	112.7(21)
O2N1O3	129.5(9)	129.5(9)	129.5(45)
wRMSD, MHz	0.42	0.41	0.41

Next, molecular structure of MN has been refined from electron diffraction intensities. The procedure was as follows. Background procedure has been applied for each of the measured total intensity functions, extracting molecular intensity. The individual intensities, four from each nozzle-to-detector distance, were averaged. The averaged molecular intensity functions $sM(s)$, one from middle and one from the long camera setting, were used in structural analysis. The geometry of the molecule has been defined using a Z-matrix, which also contains grouping of the parameters:

```
C
O 1 Rco
N 2 Rno1 1 Acon
O 3 Rno2 2 Aono1 1 D180
O 3 Rno3 2 Aono2 4 D180
H 1 Rch1 2 Aoch1 3 D180
H 1 Rch2 2 Aoch2 6 Ahch -1
H 1 Rch2 2 Aoch2 6 Ahch 1
```

Variable: Value: Group:

```
Rco 1.429925 1
Rno1 1.408961 2
Rno2 1.204332 3
Rno3 1.210520 3
Rch1 1.084687 5
Rch2 1.086124 5
Acon 112.122997 7
Aono1 112.573586 8
Aono2 117.163526 9
Aoch1 103.420346
Aoch2 111.159491
Ahch 110.510013
D180 180.0
```

The initial values of parameters have been taken from MP2(fc)/cc-pVTZ calculations. The differences between parameters in groups were fixed on the values also taken from this level of theory. In preliminary calculations of anharmonic vibrational frequencies using VPT2 theory it was found that TPSSh/def2-TZVP level of theory reproduces experimental values most closely. Therefore, force fields from this level were used to calculate interatomic vibrational mean square amplitudes and corrections, required in structural analysis. The corrections were calculated for equilibrium structure

taking into account cubic force fields. This type of calculations was done in VibModule program.^[15] In the refinement amplitudes have been divided into four groups (see Table below). The ratios of amplitudes in each group were fixed at the theoretical values. Thus scale factors for theoretical amplitudes have been refined to the values 1.06(1), 1.13(7), 0.99(5), 1.19(7). The values of refined geometrical parameters are listed in Table 8. The largest correlation 0.81 was between the first scale factor for the amplitudes and the scale factor for the molecular intensity from middle camera measurements.

Finally, a combined refinement of molecular model has been done utilizing both GED data and rotational constants. The model and grouping of parameters was the same as in the refinement based on only GED data. The relative weighting of the rotational constants has been adjusted manually so that their average contributions to the refined parameters were possibly similar to those from GED data. In the least squares method the maximal correlation -0.83 was between parameters in groups 7 and 8 (see Z-matrix above). As expected, the quality of fit for GED data and rotational constants was worse than in case of using only one type of data in the least squares refinement. However, it is expected that the overall accuracy of the refined parameters in this model was higher. The refined geometrical parameters of MN are listed in Tables 2 and 3 of the paper. Table 8 lists Cartesian coordinates of atoms in MN corresponding to the final structure. Note, the final values were corrected by the Monte-Carlo procedure, which was used to assess the influence of uncertainties in different parameters of the model and in data and also for calculation of total errors. For this reason, a series of quantum-chemical calculations has been performed for computing the possible ranges of geometrical constraints. The approximations were MP2(fc)/cc-pVTZ, MP2(full)/cc-pwCVTZ, B3LYP-D3/def2-TZVP, B3PW91-D3/def2-TZVP, M06-2X/def2-TZVP, TPSSh/def2-TZVP, PBE0-D3/def2-TZVP. The obtained from these calculations ranges for constraints were additionally extended by 30%. The same procedure was used for obtaining ranges of possible values for vibrational amplitudes and corrections, where the tested quantum-chemical approximations were PBE0-D3/def2-TZVP, B3LYP-D3/def2-TZVP, M06-2X/def2-TZVP, B3PW91-D3/def2-TZVP and TPSSh/def2-TZVP.

Table 6. Equilibrium structural parameters of methyl nitrate (Å and degrees) refined from GED data. Uncertainties are total standard deviations from Monte-Carlo simulations.

Parameter (GED numbering)	Parameter (XRD numbering)	GED, total errors
C1–O2	C1–O1	1.425(3)
O2–N3	O1–N1	1.404(2)
N3–O4	N1–O2	1.205(1)
N3–O5	N1–O3	1.199(1)
Average C–H		1.081(4)
C1–O2–N3	C1–O1–N1	113.7(3)
O2–N3–O4	O1–N1–O2	116.4(3)
O2–N3–O5	O1–N1–O3	110.8(4)
O4–N3–O5	O2–N1–O3	132.8(5)
<i>R</i> -factor, %		4.6

Table 7. Thermally averaged distances between atoms, refined amplitudes, vibrational corrections (all in Å) and group numbers for amplitudes in the refinement of MN.

```

-----
At1 At2 r_a l corr Gl
-----
C1 H6 1.096753 0.080934 -0.016500 20
C1 H8 1.098090 0.081253 -0.016400 20
C1 H7 1.098090 0.081253 -0.016400 20
N3 O4 1.203219 0.040361 -0.004400 20
N3 O5 1.208707 0.041104 -0.003700 20
O2 N3 1.420663 0.059160 -0.016500 20
C1 O2 1.432633 0.053000 -0.007700 20
H7 H8 1.791448 0.138053 -0.020000 21
H6 H8 1.794662 0.138960 -0.018200 21
H6 H7 1.794662 0.138960 -0.018200 21
O2 H6 1.994952 0.118445 -0.017100 21
O2 H8 2.092830 0.115044 -0.016000 21
O2 H7 2.092830 0.115044 -0.016000 21
O4 O5 2.208870 0.053045 -0.006400 21
O2 O4 2.158492 0.064606 -0.012100 21
O2 O5 2.239864 0.064039 -0.020000 21
C1 N3 2.397757 0.063626 -0.028600 22
O5 H7 2.566145 0.243423 -0.045400 22
O5 H8 2.566145 0.243423 -0.045400 22
C1 O5 2.571668 0.088760 -0.048300 22
N3 H8 2.697317 0.166339 -0.033500 22
N3 H7 2.697317 0.166339 -0.033500 22
N3 H6 3.261634 0.122652 -0.024500 23
C1 O4 3.431927 0.073687 -0.017200 23
O5 H6 3.613451 0.135670 -0.037200 23
O4 H8 3.784779 0.192637 -0.024900 23
O4 H7 3.784779 0.192637 -0.024900 23
O4 H6 4.133893 0.133640 -0.010800 23
-----

```

Table 8. Cartesian coordinates (Å) of atoms in MN. The values correspond to equilibrium structure refined from combined GED+RotC data and corrected in Monte-Carlo procedure. Internal numeration is used.

```

-----
At X Y Z
-----
C -1.824975055240 -0.001855788015 0.000000000000
O -0.608446978339 -0.743987070143 0.000000000000
N 0.540754291990 0.060453265649 0.000000000000
O 1.548866909894 -0.587398895955 0.000000000000
O 0.358301273211 1.251076311740 0.000000000000
H -2.582484077838 -0.764532668068 0.000000000000
H -1.906464055559 0.610621432175 -0.881373123432
H -1.906464055559 0.610621432175 0.881373123432
-----

```

3.2.5 Structural Analysis of FMN

Even the lowest predicted energy difference of 14.5 kJ mol⁻¹ (see chapter 2.5) between the two possible conformers would result in a Boltzmann distribution based ratio of 99.99:0.01 favoring the *gauche* conformer. Therefore, and due to an insufficient agreement of the experimental data with the *anti*-conformer, we decided to refine the structure of FMN taking into account only the *gauche* conformer.

The refinement procedure based on the electron diffraction intensities was in close analogy to the one described for MN with the following differences: For the medium distance only three individual intensities were used for averaging, the initial values of parameters have been taken from MP2(full)/cc-pwCVTZ calculations and the Z-matrix was modified as follows:

```
1 C
2 O 1 rOC1
3 N 2 rNO1 1 aNOC1
4 O 3 rON1 2 aONO1 1 dONOC1
5 O 3 rON2 2 aONO2 1 dONOC2
6 F 1 rFC 2 aFCO 3 dFCON
7 H 1 rHC1 2 aHCO1 6 aHCF1 -1
8 H 1 rHC2 2 aHCO2 6 aHCF2 1
```

Variables:

```
rOC1 1.39243385 1
rNO1 1.45427839 7
rON1 1.19421928 2
rON2 1.19922852 2
rFC 1.36122395 3
rHC1 1.08406195
rHC2 1.08321029
aNOC1 112.73326344 4
aONO1 111.24084116 5
aONO2 116.94953757 6
aFCO 110.61566405 8
aHCO1 104.16845212
aHCF1 109.26884269
aHCO2 111.48816078
aHCF2 108.51710362
dONOC1 174.54393828
dONOC2 -5.82750348
dFCON -78.77859396 9
```

In the refinement amplitudes have been divided into five groups (see Table below). The ratios of amplitudes in each group were fixed at the theoretical values. Thus, scale factors for theoretical amplitudes have been refined to the values 0.95(2), 1.12(4), 0.92(2), 1.40(5), 1.21(6). The values of refined geometrical parameters are listed in Table 11. The largest correlation 0.88 was between the first scale factor for the amplitudes and the scale factor for the molecular intensity from middle camera measurements.

Table 9. Equilibrium structural parameters of methyl nitrate (Å and degrees) refined from GED data. Uncertainties are total standard deviations from Monte-Carlo simulations. In this table, the numbering is chosen to fit the solid state structural data.

Parameter	GED, total errors
C1–O1	1.385(3)
O1–N1	1.454(2)
N1–O2	1.190(2)
N1–O3	1.185(1)
C1–F	1.336(2)
Average C–H	1.083
C1–O1–N1	115.3(2)
O1–N1–O2	115.1(3)
O1–N1–O3	111.9(11)
O2–N1–O3	133.0(13)
F–C1–O2–N1	–74.7(8)
R-factor, %	3.5

Table 10. Thermally averaged distances between atoms, refined amplitudes, vibrational corrections (all in Å) and group numbers for amplitudes in the refinement of FMN.

```

-----
At1 At2 r_a l corr G1
-----
C1 H8 1.100410 0.071353 -0.017200 200
C1 H7 1.101162 0.071446 -0.017100 200
N3 O4 1.189511 0.035162 -0.004100 200
N3 O5 1.194420 0.035817 -0.004000 200
C1 F6 1.346761 0.044139 -0.008600 200
C1 O2 1.398348 0.046758 -0.005200 200
O2 N3 1.461679 0.058541 -0.019600 200
H7 H8 1.790545 0.137091 -0.020500 201
O2 H7 1.980416 0.116471 -0.016900 201
F6 H8 1.986867 0.112392 -0.015900 201
F6 H7 1.994431 0.112845 -0.013700 201
O2 H8 2.069210 0.113072 -0.015000 201
O4 O5 2.227805 0.052231 -0.007100 201
O2 O4 2.138358 0.068886 -0.017000 201
O5 H8 2.414875 0.201898 -0.024600 201
O2 F6 2.296927 0.069792 -0.009200 201
O2 O5 2.236097 0.068772 -0.019600 201
C1 N3 2.423914 0.074551 -0.024100 201
N3 H8 2.645422 0.164056 -0.016600 201
C1 O5 2.586385 0.104461 -0.041900 201
N3 F6 2.991327 0.127744 -0.040600 202
O5 F6 2.933700 0.203986 -0.079600 202
N3 H7 3.295109 0.147248 -0.024900 203
C1 O4 3.391905 0.089697 -0.010400 203
O5 H7 3.613197 0.140179 -0.029000 204
O4 H8 3.739134 0.172658 -0.011400 204
O4 F6 3.948417 0.197048 -0.008200 204
O4 H7 4.099151 0.136919 -0.015300 204
-----

```

Table 11. Cartesian coordinates (Å) of atoms in FMN. The values correspond to equilibrium structure refined from GED data and corrected in Monte-Carlo procedure. Internal numeration is used.

```

-----
At | X | Y | Z
-----
C -1.325899797095 -0.322922259206 -0.512318804835
O -0.094195203689 -0.870917632317 -0.193829995850
N 0.985534186486 0.086477713116 -0.016220235555
O 1.983034410001 -0.435533501590 0.354718935236
O 0.706870079031 1.215213166122 -0.271761929045
F -1.906516833931 0.257496320177 0.541940554242
H -1.921390517964 -1.172815527223 -0.825787382163
H -1.240947552253 0.410220741584 -1.305180068695
-----

```

3.2.6 Electron diffraction intensities of MN

Middle camera 1:

S	Total Int.	Background	Exp. sM(s)
7.40000000	1.58431298e+01	1.62776846e+01	-1.97553004e-01
7.60000000	1.47094764e+01	1.55220306e+01	-3.97848181e-01
7.80000000	1.38167546e+01	1.48176613e+01	-5.26876161e-01
8.00000000	1.30916519e+01	1.41606916e+01	-6.03947735e-01
8.20000000	1.24978589e+01	1.35476587e+01	-6.35412993e-01
8.40000000	1.20458527e+01	1.29761697e+01	-6.02231895e-01
8.60000000	1.17237366e+01	1.24437807e+01	-4.97628394e-01
8.80000000	1.14660049e+01	1.19477531e+01	-3.54826878e-01
9.00000000	1.12434151e+01	1.14849420e+01	-1.89268841e-01
9.20000000	1.10113300e+01	1.10520067e+01	-3.38604354e-02
9.40000000	1.07458311e+01	1.06459456e+01	8.81953945e-02
9.60000000	1.04224464e+01	1.02637357e+01	1.48447205e-01
9.80000000	1.00363681e+01	9.90240798e+00	1.32574739e-01
10.00000000	9.63136853e+00	9.55915136e+00	7.55476798e-02
10.20000000	9.24087825e+00	9.23165240e+00	1.01935852e-02
10.40000000	8.87169499e+00	8.91902679e+00	-5.51910728e-02
10.60000000	8.56109142e+00	8.62090377e+00	-7.35434373e-02
10.80000000	8.29589294e+00	8.33706106e+00	-5.33300242e-02
11.00000000	8.08925311e+00	8.06731783e+00	2.99093332e-02
11.20000000	7.90634055e+00	7.81137494e+00	1.36162305e-01
11.40000000	7.71900446e+00	7.56866983e+00	2.26435395e-01
11.60000000	7.53912355e+00	7.33844622e+00	3.17213885e-01
11.80000000	7.34075102e+00	7.11976586e+00	3.66251497e-01
12.00000000	7.13146571e+00	6.91154085e+00	3.81839351e-01
12.20000000	6.90022241e+00	6.71268485e+00	3.40841019e-01
12.40000000	6.66269761e+00	6.52252461e+00	2.66483500e-01
12.60000000	6.43206734e+00	6.34047804e+00	1.82009169e-01
12.80000000	6.19374102e+00	6.16596315e+00	5.76644243e-02
13.00000000	5.96873488e+00	5.99843647e+00	-6.43702285e-02
13.20000000	5.76135730e+00	5.83743984e+00	-1.72042787e-01
13.40000000	5.56992546e+00	5.68276516e+00	-2.66076811e-01
13.60000000	5.39540893e+00	5.53428457e+00	-3.41274234e-01
13.80000000	5.25802591e+00	5.39187287e+00	-3.42568937e-01
14.00000000	5.13227308e+00	5.25537711e+00	-3.27941525e-01
14.20000000	5.03519231e+00	5.12462659e+00	-2.47816432e-01
14.40000000	4.95113740e+00	4.99946301e+00	-1.39192683e-01
14.60000000	4.87736553e+00	4.87966544e+00	-6.88133723e-03
14.80000000	4.79709005e+00	4.76493169e+00	9.98846663e-02
15.00000000	4.69948162e+00	4.65490877e+00	1.43631751e-01
15.20000000	4.59063435e+00	4.54924294e+00	1.38297631e-01
15.40000000	4.46720121e+00	4.44765905e+00	6.76646249e-02
15.60000000	4.34562199e+00	4.34992283e+00	-1.54239913e-02
15.80000000	4.21913207e+00	4.25583424e+00	-1.36258688e-01
16.00000000	4.10106931e+00	4.16524378e+00	-2.46514132e-01
16.20000000	4.01249439e+00	4.07804823e+00	-2.60411857e-01
16.40000000	3.93546646e+00	3.99420772e+00	-2.41188435e-01
16.60000000	3.88174028e+00	3.91367330e+00	-1.35445191e-01
16.80000000	3.82940529e+00	3.83634685e+00	-3.03982184e-02
17.00000000	3.78594021e+00	3.76208009e+00	1.07818531e-01
17.20000000	3.74536175e+00	3.69067250e+00	2.54873624e-01
17.40000000	3.69763945e+00	3.62190675e+00	3.63827401e-01
17.60000000	3.64304046e+00	3.55555105e+00	4.33073142e-01
17.80000000	3.57664966e+00	3.49137267e+00	4.34766077e-01
18.00000000	3.51000183e+00	3.42915038e+00	4.24398442e-01
18.20000000	3.43815636e+00	3.36867838e+00	3.75369573e-01
18.40000000	3.35772067e+00	3.30979509e+00	2.66430624e-01
18.60000000	3.27502069e+00	3.25237718e+00	1.29495801e-01
18.80000000	3.19432031e+00	3.19633151e+00	-1.18294079e-02
19.00000000	3.11314751e+00	3.14159282e+00	-1.72034040e-01
19.20000000	3.03771705e+00	3.08813525e+00	-3.13467296e-01
19.40000000	2.97248521e+00	3.03599172e+00	-4.05806866e-01
19.60000000	2.92096579e+00	2.98521145e+00	-4.21817725e-01
19.80000000	2.87222135e+00	2.93584237e+00	-4.29074882e-01
20.00000000	2.83885666e+00	2.88792987e+00	-3.39850377e-01
20.20000000	2.80070752e+00	2.84150538e+00	-2.90028214e-01
20.40000000	2.76862453e+00	2.79659353e+00	-2.04022352e-01
20.60000000	2.73332829e+00	2.75319270e+00	-1.48629973e-01
20.80000000	2.70394489e+00	2.71126859e+00	-5.61851133e-02
21.00000000	2.66631908e+00	2.67075400e+00	-3.48716088e-02
21.20000000	2.63145390e+00	2.63156982e+00	-9.33915694e-04
21.40000000	2.59594125e+00	2.59363655e+00	1.90160395e-02
21.60000000	2.56504202e+00	2.55687162e+00	6.90220971e-02
21.80000000	2.53344405e+00	2.52118874e+00	1.05937085e-01

22.00000000	2.50669105e+00	2.48650211e+00	1.78627159e-01
22.20000000	2.47592793e+00	2.45272952e+00	2.09972152e-01
22.40000000	2.45203699e+00	2.41980970e+00	2.98325609e-01
22.60000000	2.42401281e+00	2.38767834e+00	3.43915302e-01
22.80000000	2.39286386e+00	2.35627227e+00	3.54071199e-01
23.00000000	2.36062864e+00	2.32553397e+00	3.47093355e-01
23.20000000	2.32816350e+00	2.29540833e+00	3.31060926e-01
23.40000000	2.29199249e+00	2.26583923e+00	2.70092603e-01
23.60000000	2.25588427e+00	2.23677607e+00	2.01608668e-01
23.80000000	2.21829075e+00	2.20817331e+00	1.09047171e-01
24.00000000	2.17859976e+00	2.17999211e+00	-1.53287052e-02
24.20000000	2.13788913e+00	2.15220420e+00	-1.60962813e-01
24.40000000	2.09898430e+00	2.12479593e+00	-2.96406726e-01
24.60000000	2.06489208e+00	2.09775915e+00	-3.85425611e-01
24.80000000	2.03109793e+00	2.07109110e+00	-4.78892811e-01
25.00000000	2.00291156e+00	2.04480217e+00	-5.12159685e-01
25.20000000	1.97599279e+00	2.01891817e+00	-5.35791752e-01
25.40000000	1.95955218e+00	1.99348594e+00	-4.32366918e-01
25.60000000	1.93948994e+00	1.96855118e+00	-3.77926537e-01
25.80000000	1.92863816e+00	1.94415349e+00	-2.05897028e-01
26.00000000	1.91747162e+00	1.92031222e+00	-3.84602038e-02
26.20000000	1.90448758e+00	1.89702841e+00	1.03019131e-01
26.40000000	1.88945135e+00	1.87428559e+00	2.13615289e-01
26.60000000	1.87326574e+00	1.85205774e+00	3.04597853e-01
26.80000000	1.85415948e+00	1.83031230e+00	3.49177762e-01
27.00000000	1.83457351e+00	1.80901269e+00	3.81502010e-01
27.20000000	1.81293346e+00	1.78812100e+00	3.77434770e-01
27.40000000	1.79400901e+00	1.76760662e+00	4.09268327e-01
27.60000000	1.76699377e+00	1.74744445e+00	3.08771586e-01
27.80000000	1.74257903e+00	1.72762187e+00	2.40682918e-01
28.00000000	1.72072726e+00	1.70812930e+00	2.06508187e-01
28.20000000	1.69663013e+00	1.68895920e+00	1.28078982e-01
28.40000000	1.67298111e+00	1.67011774e+00	4.86908999e-02
28.60000000	1.65058902e+00	1.65161850e+00	-1.78268165e-02
28.80000000	1.62669886e+00	1.63347745e+00	-1.19514020e-01
29.00000000	1.60466750e+00	1.61570875e+00	-1.98176846e-01
29.20000000	1.58909025e+00	1.59831158e+00	-1.68467049e-01
29.40000000	1.57004283e+00	1.58125929e+00	-2.08545167e-01
29.60000000	1.55281814e+00	1.56451708e+00	-2.21339149e-01
29.80000000	1.53391490e+00	1.54804841e+00	-2.72070510e-01
30.00000000	1.51730922e+00	1.53181929e+00	-2.84173186e-01
30.20000000	1.49834896e+00	1.51580025e+00	-3.47690280e-01
30.40000000	1.48562982e+00	1.49997281e+00	-2.90689870e-01
30.60000000	1.47260136e+00	1.48431884e+00	-2.41561945e-01
30.80000000	1.45865842e+00	1.46882508e+00	-2.13186204e-01
31.00000000	1.44860329e+00	1.45348457e+00	-1.04108186e-01
31.20000000	1.43970994e+00	1.43829189e+00	3.07608804e-02
31.40000000	1.42957482e+00	1.42324850e+00	1.39572514e-01
31.60000000	1.41926236e+00	1.40836277e+00	2.44558548e-01
31.80000000	1.40576041e+00	1.39364917e+00	2.76351763e-01
32.00000000	1.39031532e+00	1.37912708e+00	2.59601808e-01
32.20000000	1.37961967e+00	1.36481007e+00	3.49403235e-01

Middle camera 2:

S	Total Int.	Background	Exp. sM(s)
7.40000000	1.12009397e+01	1.15651605e+01	-2.33047654e-01
7.60000000	1.04845403e+01	1.10342908e+01	-3.78647247e-01
7.80000000	9.84310353e+00	1.05391079e+01	-5.15113232e-01
8.00000000	9.34089934e+00	1.00770613e+01	-5.84425899e-01
8.20000000	8.91579058e+00	9.64605997e+00	-6.20793252e-01
8.40000000	8.61231563e+00	9.24480117e+00	-5.74688238e-01
8.60000000	8.38100913e+00	8.87175652e+00	-4.75714987e-01
8.80000000	8.21128113e+00	8.52498080e+00	-3.23819744e-01
9.00000000	8.05269650e+00	8.20203381e+00	-1.63866166e-01
9.20000000	7.89702592e+00	7.90022369e+00	-3.72388086e-03
9.40000000	7.69605421e+00	7.61705726e+00	9.74879528e-02
9.60000000	7.46013837e+00	7.35010654e+00	1.43712957e-01
9.80000000	7.18303890e+00	7.09708458e+00	1.18689906e-01
10.00000000	6.89177318e+00	6.85594511e+00	5.22583911e-02
10.20000000	6.60458509e+00	6.62511753e+00	-3.16116596e-02
10.40000000	6.35739229e+00	6.40413020e+00	-7.59001265e-02
10.60000000	6.13839323e+00	6.19288739e+00	-9.32744360e-02
10.80000000	5.95572466e+00	5.99143382e+00	-6.43683741e-02
11.00000000	5.81120094e+00	5.79982706e+00	2.15718063e-02
11.20000000	5.68551417e+00	5.61796298e+00	1.34670403e-01

11.40000000	5.56564153e+00	5.44546197e+00	2.51594267e-01
11.60000000	5.43347743e+00	5.28175635e+00	3.33215781e-01
11.80000000	5.29407702e+00	5.12616543e+00	3.86518311e-01
12.00000000	5.13026820e+00	4.97792504e+00	3.67244965e-01
12.20000000	4.97156311e+00	4.83630143e+00	3.41209618e-01
12.40000000	4.79467490e+00	4.70083011e+00	2.47546780e-01
12.60000000	4.63023929e+00	4.57111529e+00	1.62971701e-01
12.80000000	4.45838411e+00	4.44673768e+00	3.35244245e-02
13.00000000	4.30238768e+00	4.32730066e+00	-7.48431068e-02
13.20000000	4.15810344e+00	4.21245054e+00	-1.70300351e-01
13.40000000	4.01907009e+00	4.10202923e+00	-2.71000633e-01
13.60000000	3.90239616e+00	3.99598125e+00	-3.18509301e-01
13.80000000	3.79643392e+00	3.89427513e+00	-3.46716331e-01
14.00000000	3.71301940e+00	3.79688564e+00	-3.09234345e-01
14.20000000	3.64113585e+00	3.70374870e+00	-2.40054749e-01
14.40000000	3.58639544e+00	3.61477571e+00	-1.13057044e-01
14.60000000	3.53073490e+00	3.52978352e+00	3.93512364e-03
14.80000000	3.47056997e+00	3.44851335e+00	9.46604723e-02
15.00000000	3.41703586e+00	3.37065679e+00	1.38735857e-01
15.20000000	3.32369469e+00	3.29589070e+00	1.28226516e-01
15.40000000	3.23816412e+00	3.22394968e+00	6.78988058e-02
15.60000000	3.14703586e+00	3.15461975e+00	-3.75033121e-02
15.80000000	3.05826885e+00	3.08775404e+00	-1.50875359e-01
16.00000000	2.97860334e+00	3.02326779e+00	-2.36377072e-01
16.20000000	2.91678394e+00	2.96111890e+00	-2.42552335e-01
16.40000000	2.86203726e+00	2.90131541e+00	-2.22023975e-01
16.60000000	2.82496537e+00	2.84386516e+00	-1.10320423e-01
16.80000000	2.78664894e+00	2.78872768e+00	-1.25228386e-02
17.00000000	2.75628650e+00	2.73581850e+00	1.27185341e-01
17.20000000	2.72333760e+00	2.68498665e+00	2.45675822e-01
17.40000000	2.69040410e+00	2.63604289e+00	3.58827675e-01
17.60000000	2.65044102e+00	2.58876162e+00	4.19334667e-01
17.80000000	2.60570152e+00	2.54291560e+00	4.39491351e-01
18.00000000	2.55538374e+00	2.49829871e+00	4.11292095e-01
18.20000000	2.50598384e+00	2.45474108e+00	3.79925269e-01
18.40000000	2.44182544e+00	2.41213114e+00	2.26511334e-01
18.60000000	2.38517263e+00	2.37042510e+00	1.15719356e-01
18.80000000	2.32449549e+00	2.32959765e+00	-4.11747616e-02
19.00000000	2.26669007e+00	2.28964863e+00	-1.90515124e-01
19.20000000	2.21611382e+00	2.25060433e+00	-2.94239954e-01
19.40000000	2.16468917e+00	2.21253558e+00	-4.19527863e-01
19.60000000	2.12635691e+00	2.17554045e+00	-4.43107026e-01
19.80000000	2.09611709e+00	2.13969340e+00	-4.03240483e-01
20.00000000	2.06709624e+00	2.10504052e+00	-3.60508839e-01
20.20000000	2.04241384e+00	2.07161026e+00	-2.84690467e-01
20.40000000	2.02082799e+00	2.03939717e+00	-1.85746673e-01
20.60000000	1.99932659e+00	2.00834958e+00	-9.25504141e-02
20.80000000	1.97300503e+00	1.97838588e+00	-5.65721870e-02
21.00000000	1.94916955e+00	1.94941614e+00	-2.65637445e-03
21.20000000	1.92304249e+00	1.92134442e+00	1.87363793e-02
21.40000000	1.89757736e+00	1.89409291e+00	3.93682700e-02
21.60000000	1.87265355e+00	1.86760090e+00	5.84371001e-02
21.80000000	1.85153172e+00	1.84181737e+00	1.14980337e-01
22.00000000	1.82950485e+00	1.81668966e+00	1.55191068e-01
22.20000000	1.81101314e+00	1.79216675e+00	2.33454667e-01
22.40000000	1.79143495e+00	1.76820230e+00	2.94316673e-01
22.60000000	1.77065385e+00	1.74475226e+00	3.35506675e-01
22.80000000	1.74724832e+00	1.72177886e+00	3.37269595e-01
23.00000000	1.72290386e+00	1.69925114e+00	3.20148423e-01
23.20000000	1.70155598e+00	1.67713308e+00	3.37845219e-01
23.40000000	1.67234920e+00	1.65537954e+00	2.39878620e-01
23.60000000	1.64868410e+00	1.63395874e+00	2.12684922e-01
23.80000000	1.61876471e+00	1.61283793e+00	8.74591979e-02
24.00000000	1.58934607e+00	1.59199995e+00	-4.00081530e-02
24.20000000	1.56231544e+00	1.57143293e+00	-1.40408859e-01
24.40000000	1.53148590e+00	1.55112982e+00	-3.09008014e-01
24.60000000	1.50673733e+00	1.53109631e+00	-3.91373711e-01
24.80000000	1.48030823e+00	1.51133892e+00	-5.09191591e-01
25.00000000	1.46150003e+00	1.49187478e+00	-5.09002999e-01
25.20000000	1.44262927e+00	1.47272385e+00	-5.14953045e-01
25.40000000	1.43035965e+00	1.45392520e+00	-4.11688981e-01
25.60000000	1.41775276e+00	1.43552044e+00	-3.16855575e-01
25.80000000	1.40792787e+00	1.41755605e+00	-1.75236261e-01
26.00000000	1.39797748e+00	1.40007241e+00	-3.89038173e-02
26.20000000	1.38719535e+00	1.38309639e+00	7.76464638e-02
26.40000000	1.37944340e+00	1.36662991e+00	2.47525711e-01
26.60000000	1.36516758e+00	1.35065261e+00	2.85860475e-01
26.80000000	1.35425130e+00	1.33514518e+00	3.83511906e-01

27.00000000	1.33729155e+00	1.32008391e+00	3.51951950e-01
27.20000000	1.32056030e+00	1.30545402e+00	3.14749387e-01
27.40000000	1.30446078e+00	1.29123423e+00	2.80667523e-01
27.60000000	1.29278423e+00	1.27737454e+00	3.32954462e-01
27.80000000	1.27177568e+00	1.26380037e+00	1.75434198e-01
28.00000000	1.26103046e+00	1.25044182e+00	2.37101638e-01
28.20000000	1.24223148e+00	1.23721824e+00	1.14267028e-01
28.40000000	1.22545915e+00	1.22407798e+00	3.20448832e-02
28.60000000	1.21111106e+00	1.21098344e+00	3.01407456e-03
28.80000000	1.19692019e+00	1.19790104e+00	-2.35816158e-02
29.00000000	1.18112546e+00	1.18481246e+00	-9.02446026e-02
29.20000000	1.16754689e+00	1.17172069e+00	-1.04013660e-01
29.40000000	1.15282402e+00	1.15863925e+00	-1.47559026e-01
29.60000000	1.13487590e+00	1.14560105e+00	-2.77116144e-01
29.80000000	1.12190961e+00	1.13265083e+00	-2.82600928e-01
30.00000000	1.10797551e+00	1.11981636e+00	-3.17217603e-01
30.20000000	1.09300973e+00	1.10711437e+00	-3.84748271e-01
30.40000000	1.08320550e+00	1.09455324e+00	-3.15170872e-01
30.60000000	1.07246387e+00	1.08211813e+00	-2.73002036e-01
30.80000000	1.06305505e+00	1.06978686e+00	-1.93814101e-01
31.00000000	1.05459092e+00	1.05753700e+00	-8.63596707e-02
31.20000000	1.04562154e+00	1.04535135e+00	8.06417609e-03
31.40000000	1.03788686e+00	1.03322443e+00	1.41692760e-01
31.60000000	1.02880988e+00	1.02115819e+00	2.36783272e-01
31.80000000	1.01992535e+00	1.00916682e+00	3.39013528e-01
32.00000000	1.00692492e+00	9.97279165e-01	3.09506244e-01
32.20000000	9.92949439e-01	9.85538455e-01	2.42135353e-01

Middle camera 3:

S	Total Int.	Background	Exp. sM(s)
7.40000000	1.11055314e+01	1.14407610e+01	-2.16829885e-01
7.60000000	1.03833212e+01	1.09249386e+01	-3.76779400e-01
7.80000000	9.73288805e+00	1.04435342e+01	-5.30762819e-01
8.00000000	9.22935350e+00	9.99382872e+00	-6.11957831e-01
8.20000000	8.83276501e+00	9.57335303e+00	-6.34346377e-01
8.40000000	8.53720919e+00	9.18034455e+00	-5.88467791e-01
8.60000000	8.31872316e+00	8.81302939e+00	-4.82357810e-01
8.80000000	8.14252235e+00	8.46951285e+00	-3.39749934e-01
9.00000000	8.00090316e+00	8.14770580e+00	-1.62158989e-01
9.20000000	7.83940452e+00	7.84547025e+00	-7.11297587e-03
9.40000000	7.64713749e+00	7.56100508e+00	1.07081619e-01
9.60000000	7.40659191e+00	7.29255996e+00	1.50112823e-01
9.80000000	7.12136538e+00	7.03842833e+00	1.15477920e-01
10.00000000	6.84291541e+00	6.79695097e+00	6.76250962e-02
10.20000000	6.54849842e+00	6.56671600e+00	-2.82971352e-02
10.40000000	6.30322699e+00	6.34722105e+00	-7.20848092e-02
10.60000000	6.08661922e+00	6.13819830e+00	-8.90714627e-02
10.80000000	5.90989498e+00	5.93940434e+00	-5.36587463e-02
11.00000000	5.76593546e+00	5.75058530e+00	2.93625383e-02
11.20000000	5.64762467e+00	5.57140822e+00	1.53215165e-01
11.40000000	5.52235621e+00	5.40137790e+00	2.55333496e-01
11.60000000	5.39669275e+00	5.23991536e+00	3.47070059e-01
11.80000000	5.24457549e+00	5.08638488e+00	3.66989376e-01
12.00000000	5.09115161e+00	4.94010205e+00	3.66914423e-01
12.20000000	4.92627585e+00	4.80039629e+00	3.19917481e-01
12.40000000	4.75782781e+00	4.66687283e+00	2.41669698e-01
12.60000000	4.59080825e+00	4.53917081e+00	1.43337139e-01
12.80000000	4.43509995e+00	4.41688926e+00	5.27739715e-02
13.00000000	4.28155339e+00	4.29960687e+00	-5.45852898e-02
13.20000000	4.13062093e+00	4.18694785e+00	-1.77579318e-01
13.40000000	4.00171340e+00	4.07871617e+00	-2.52980849e-01
13.60000000	3.88038675e+00	3.97476665e+00	-3.22928778e-01
13.80000000	3.78053478e+00	3.87496356e+00	-3.36291475e-01
14.00000000	3.69507229e+00	3.77916727e+00	-3.11531512e-01
14.20000000	3.62558979e+00	3.68723540e+00	-2.37404911e-01
14.40000000	3.57110003e+00	3.59905379e+00	-1.11844413e-01
14.60000000	3.52007230e+00	3.51448476e+00	2.32119889e-02
14.80000000	3.45474988e+00	3.43336262e+00	9.21928646e-02
15.00000000	3.38781074e+00	3.35550778e+00	1.44402667e-01
15.20000000	3.30722528e+00	3.28073689e+00	1.22723536e-01
15.40000000	3.22029871e+00	3.20891496e+00	5.46320943e-02
15.60000000	3.12682287e+00	3.13991810e+00	-6.50608231e-02
15.80000000	3.03978995e+00	3.07362181e+00	-1.73913192e-01
16.00000000	2.96162144e+00	3.00989516e+00	-2.56613475e-01
16.20000000	2.90041284e+00	2.94860936e+00	-2.64797243e-01

16.40000000	2.85051879e+00	2.88967438e+00	-2.22222814e-01
16.60000000	2.81111753e+00	2.83299834e+00	-1.28210959e-01
16.80000000	2.78024951e+00	2.77847184e+00	1.07486178e-02
17.00000000	2.75028943e+00	2.72596800e+00	1.51676161e-01
17.20000000	2.71848235e+00	2.67535502e+00	2.77267919e-01
17.40000000	2.68295571e+00	2.62652082e+00	3.73866051e-01
17.60000000	2.64406056e+00	2.57935912e+00	4.41483771e-01
17.80000000	2.60363717e+00	2.53376790e+00	4.90839346e-01
18.00000000	2.54748948e+00	2.48965831e+00	4.18114060e-01
18.20000000	2.49250386e+00	2.44696773e+00	3.38687521e-01
18.40000000	2.43416174e+00	2.40565776e+00	2.18016560e-01
18.60000000	2.37569896e+00	2.36569209e+00	7.86779740e-02
18.80000000	2.31744497e+00	2.32702605e+00	-7.74053010e-02
19.00000000	2.26581731e+00	2.28960405e+00	-1.97391320e-01
19.20000000	2.21298574e+00	2.25336769e+00	-3.44077643e-01
19.40000000	2.17251676e+00	2.21828363e+00	-4.00254147e-01
19.60000000	2.13767220e+00	2.18431979e+00	-4.18570924e-01
19.80000000	2.10675333e+00	2.15144420e+00	-4.11295454e-01
20.00000000	2.08178497e+00	2.11962700e+00	-3.57063090e-01
20.20000000	2.06203677e+00	2.08883560e+00	-2.59157042e-01
20.40000000	2.03987535e+00	2.05903435e+00	-1.89818918e-01
20.60000000	2.01976438e+00	2.03018220e+00	-1.05708264e-01
20.80000000	1.99742377e+00	2.00222893e+00	-4.99180320e-02
21.00000000	1.97034170e+00	1.97511823e+00	-5.07853854e-02
21.20000000	1.94445138e+00	1.94879073e+00	-4.72057120e-02
21.40000000	1.92582382e+00	1.92318293e+00	2.93862293e-02
21.60000000	1.90557741e+00	1.89822004e+00	8.37200932e-02
21.80000000	1.88452617e+00	1.87382705e+00	1.24472894e-01
22.00000000	1.86897322e+00	1.84993526e+00	2.26405320e-01
22.20000000	1.84750952e+00	1.82648720e+00	2.55515359e-01
22.40000000	1.82616213e+00	1.80345512e+00	2.82034678e-01
22.60000000	1.80890460e+00	1.78082126e+00	3.56399221e-01
22.80000000	1.78766358e+00	1.75856784e+00	3.77229051e-01
23.00000000	1.76536275e+00	1.73668268e+00	3.79828518e-01
23.20000000	1.74146916e+00	1.71516075e+00	3.55858856e-01
23.40000000	1.71293015e+00	1.69400283e+00	2.61451349e-01
23.60000000	1.68848274e+00	1.67321662e+00	2.15321956e-01
23.80000000	1.65913646e+00	1.65281091e+00	9.10861110e-02
24.00000000	1.62912317e+00	1.63279735e+00	-5.40056859e-02
24.20000000	1.59670614e+00	1.61318745e+00	-2.47241974e-01
24.40000000	1.57033539e+00	1.59398931e+00	-3.62082524e-01
24.60000000	1.54629763e+00	1.57519415e+00	-4.51280522e-01
24.80000000	1.52528074e+00	1.55677842e+00	-5.01768676e-01
25.00000000	1.50640091e+00	1.53871185e+00	-5.24967356e-01
25.20000000	1.48891132e+00	1.52096727e+00	-5.31115959e-01
25.40000000	1.48077922e+00	1.50353010e+00	-3.84343698e-01
25.60000000	1.46752134e+00	1.48638870e+00	-3.24951714e-01
25.80000000	1.46235458e+00	1.46953815e+00	-1.26118537e-01
26.00000000	1.45343825e+00	1.45297476e+00	8.29391911e-03
26.20000000	1.44308458e+00	1.43669903e+00	1.16448519e-01
26.40000000	1.43311446e+00	1.42070940e+00	2.30514058e-01
26.60000000	1.41893972e+00	1.40500197e+00	2.63874521e-01
26.80000000	1.40850705e+00	1.38956998e+00	3.65230555e-01
27.00000000	1.39145554e+00	1.37439998e+00	3.35055337e-01
27.20000000	1.37804800e+00	1.35947742e+00	3.71554250e-01
27.40000000	1.36019305e+00	1.34478821e+00	3.13873054e-01
27.60000000	1.34535749e+00	1.33031724e+00	3.12039163e-01
27.80000000	1.32643429e+00	1.31604595e+00	2.19442044e-01
28.00000000	1.30862612e+00	1.30195570e+00	1.43454729e-01
28.20000000	1.29211125e+00	1.28802633e+00	8.94350968e-02
28.40000000	1.27716618e+00	1.27423942e+00	6.52311085e-02
28.60000000	1.25898678e+00	1.26057714e+00	-3.60822272e-02
28.80000000	1.24496201e+00	1.24702490e+00	-4.76424539e-02
29.00000000	1.22884340e+00	1.23356883e+00	-1.11090315e-01
29.20000000	1.21603987e+00	1.22019662e+00	-9.94733720e-02
29.40000000	1.19937674e+00	1.20689263e+00	-1.83087751e-01
29.60000000	1.18554952e+00	1.19364579e+00	-2.00771175e-01
29.80000000	1.16994040e+00	1.18044790e+00	-2.65258225e-01
30.00000000	1.15622271e+00	1.16729390e+00	-2.84534792e-01
30.20000000	1.14214164e+00	1.15418148e+00	-3.15031229e-01
30.40000000	1.12902812e+00	1.14111559e+00	-3.22017535e-01
30.60000000	1.12217238e+00	1.12810263e+00	-1.60859255e-01
30.80000000	1.10816596e+00	1.11515011e+00	-1.92899524e-01
31.00000000	1.10235944e+00	1.10227497e+00	2.37564223e-03
31.20000000	1.08408732e+00	1.08949975e+00	-1.54995927e-01
31.40000000	1.08171706e+00	1.07685600e+00	1.41743517e-01
31.60000000	1.06882019e+00	1.06436427e+00	1.32292389e-01
31.80000000	1.06190589e+00	1.05204185e+00	2.98159814e-01

32.00000000 1.04791008e+00 1.03989995e+00 2.46489262e-01
32.20000000 1.03905547e+00 1.02794559e+00 3.48012627e-01

Middle camera 4:

S | Total Int. | Background | Exp. sM(s)

7.40000000 5.22529630e+00 5.35668558e+00 -1.81507885e-01
7.60000000 4.89405207e+00 5.12336227e+00 -3.40158950e-01
7.80000000 4.59742409e+00 4.90538867e+00 -4.89690804e-01
8.00000000 4.36976108e+00 4.70154767e+00 -5.64557220e-01
8.20000000 4.18620883e+00 4.51070114e+00 -5.89894311e-01
8.40000000 4.06215971e+00 4.33201520e+00 -5.23263648e-01
8.60000000 3.95643685e+00 4.16463694e+00 -4.29934423e-01
8.80000000 3.87295070e+00 4.00767539e+00 -2.95826658e-01
9.00000000 3.80841514e+00 3.86017067e+00 -1.20668186e-01
9.20000000 3.73115181e+00 3.72116746e+00 2.46847346e-02
9.40000000 3.62839794e+00 3.58990364e+00 1.00795596e-01
9.60000000 3.51466763e+00 3.46566515e+00 1.35738369e-01
9.80000000 3.38483539e+00 3.34775140e+00 1.08557387e-01
10.00000000 3.24716251e+00 3.23546626e+00 3.61501168e-02
10.20000000 3.11482312e+00 3.12821111e+00 -4.36535197e-02
10.40000000 3.00702618e+00 3.02578271e+00 -6.44685884e-02
10.60000000 2.90464983e+00 2.92806264e+00 -8.47576900e-02
10.80000000 2.82177039e+00 2.83493279e+00 -5.01436491e-02
11.00000000 2.75890211e+00 2.74626353e+00 5.06231103e-02
11.20000000 2.69908770e+00 2.66188979e+00 1.56511576e-01
11.40000000 2.64124314e+00 2.58158586e+00 2.63439994e-01
11.60000000 2.57388532e+00 2.50510209e+00 3.18504171e-01
11.80000000 2.50499023e+00 2.43217903e+00 3.53252026e-01
12.00000000 2.43418120e+00 2.36254027e+00 3.63884200e-01
12.20000000 2.34846384e+00 2.29592843e+00 2.79160287e-01
12.40000000 2.27327270e+00 2.23223011e+00 2.27990896e-01
12.60000000 2.18535229e+00 2.17134477e+00 8.12836164e-02
12.80000000 2.11161824e+00 2.11314650e+00 -9.25714462e-03
13.00000000 2.04497317e+00 2.05747319e+00 -7.89805043e-02
13.20000000 1.97827317e+00 2.00415232e+00 -1.70448450e-01
13.40000000 1.91370165e+00 1.95307712e+00 -2.70153833e-01
13.60000000 1.86219165e+00 1.90415353e+00 -2.99703536e-01
13.80000000 1.81302971e+00 1.85727579e+00 -3.28758850e-01
14.00000000 1.77959888e+00 1.81232976e+00 -2.52841610e-01
14.20000000 1.74545838e+00 1.76919719e+00 -1.90533342e-01
14.40000000 1.71858651e+00 1.72778597e+00 -7.66716558e-02
14.60000000 1.69418806e+00 1.68800761e+00 5.34562677e-02
14.80000000 1.66302116e+00 1.64977305e+00 1.18847962e-01
15.00000000 1.62540536e+00 1.61299900e+00 1.15372335e-01
15.20000000 1.59189863e+00 1.57761043e+00 1.37664312e-01
15.40000000 1.55016092e+00 1.54355516e+00 6.59055052e-02
15.60000000 1.50402185e+00 1.51079080e+00 -6.98942539e-02
15.80000000 1.46433125e+00 1.47927659e+00 -1.59629659e-01
16.00000000 1.42723052e+00 1.44896505e+00 -2.40000556e-01
16.20000000 1.39858581e+00 1.41980684e+00 -2.42132100e-01
16.40000000 1.37195398e+00 1.39176890e+00 -2.33490423e-01
16.60000000 1.35460511e+00 1.36481450e+00 -1.24174930e-01
16.80000000 1.33793179e+00 1.33889249e+00 -1.20546365e-02
17.00000000 1.32257920e+00 1.31394085e+00 1.11764510e-01
17.20000000 1.30779529e+00 1.28989148e+00 2.38737649e-01
17.40000000 1.29253063e+00 1.26668186e+00 3.55076313e-01
17.60000000 1.27121681e+00 1.24425159e+00 3.81424371e-01
17.80000000 1.24984918e+00 1.22254489e+00 3.97544798e-01
18.00000000 1.22647168e+00 1.20150882e+00 3.73972674e-01
18.20000000 1.20234996e+00 1.18109513e+00 3.27524699e-01
18.40000000 1.17404249e+00 1.16126705e+00 2.02423790e-01
18.60000000 1.14948068e+00 1.14199362e+00 1.21943927e-01
18.80000000 1.12190391e+00 1.12324488e+00 -2.24440626e-02
19.00000000 1.09551742e+00 1.10499531e+00 -1.62968903e-01
19.20000000 1.07203243e+00 1.08722651e+00 -2.68321680e-01
19.40000000 1.05284302e+00 1.06993571e+00 -3.09923299e-01
19.60000000 1.03082730e+00 1.05312655e+00 -4.15016936e-01
19.80000000 1.01907581e+00 1.03680652e+00 -3.38605073e-01
20.00000000 1.00462200e+00 1.02097940e+00 -3.20425628e-01
20.20000000 9.92197978e-01 1.00564847e+00 -2.70173897e-01
20.40000000 9.82408040e-01 9.90814380e-01 -1.73079171e-01
20.60000000 9.70362205e-01 9.76470301e-01 -1.28858784e-01
20.80000000 9.59147280e-01 9.62602780e-01 -7.46667388e-02
21.00000000 9.48339946e-01 9.49191075e-01 -1.88304560e-02
21.20000000 9.36411982e-01 9.36209983e-01 4.57415274e-03

21.40000000	9.23357082e-01	9.23636279e-01	-6.46879536e-03
21.60000000	9.13226637e-01	9.11446514e-01	4.21864087e-02
21.80000000	9.03892759e-01	8.99613880e-01	1.03688451e-01
22.00000000	8.92850523e-01	8.88109665e-01	1.17439195e-01
22.20000000	8.87935649e-01	8.76906423e-01	2.79218872e-01
22.40000000	8.73815269e-01	8.65983388e-01	2.02583713e-01
22.60000000	8.67451418e-01	8.55325789e-01	3.20391633e-01
22.80000000	8.55608636e-01	8.44916358e-01	2.88530258e-01
23.00000000	8.47167806e-01	8.34738669e-01	3.42466665e-01
23.20000000	8.34957073e-01	8.24775841e-01	2.86386409e-01
23.40000000	8.23124974e-01	8.15012269e-01	2.32925713e-01
23.60000000	8.10542070e-01	8.05433337e-01	1.49690991e-01
23.80000000	8.00154056e-01	7.96024352e-01	1.23472302e-01
24.00000000	7.85868695e-01	7.86770333e-01	-2.75039574e-02
24.20000000	7.72350036e-01	7.77659916e-01	-1.65238158e-01
24.40000000	7.61620937e-01	7.68684996e-01	-2.24231040e-01
24.60000000	7.48643129e-01	7.59837718e-01	-3.62428554e-01
24.80000000	7.37737311e-01	7.51113069e-01	-4.41636308e-01
25.00000000	7.30658796e-01	7.42507513e-01	-3.98942662e-01
25.20000000	7.21394591e-01	7.34020476e-01	-4.33465168e-01
25.40000000	7.13402136e-01	7.25661524e-01	-4.29109756e-01
25.60000000	7.09351402e-01	7.17442865e-01	-2.88721873e-01
25.80000000	7.06051964e-01	7.09373552e-01	-1.20806539e-01
26.00000000	7.00125751e-01	7.01461047e-01	-4.94934140e-02
26.20000000	6.96253790e-01	6.93712283e-01	9.59871898e-02
26.40000000	6.89756596e-01	6.86128857e-01	1.39583543e-01
26.60000000	6.85487626e-01	6.78708951e-01	2.65670247e-01
26.80000000	6.76781729e-01	6.71446325e-01	2.12956434e-01
27.00000000	6.72005242e-01	6.64331576e-01	3.11875871e-01
27.20000000	6.64447485e-01	6.57349944e-01	2.93683934e-01
27.40000000	6.56623280e-01	6.50486677e-01	2.58487872e-01
27.60000000	6.49928201e-01	6.43725314e-01	2.65951476e-01
27.80000000	6.42185442e-01	6.37047023e-01	2.24234704e-01
28.00000000	6.34749370e-01	6.30433038e-01	1.91705187e-01
28.20000000	6.26573761e-01	6.23866771e-01	1.22361232e-01
28.40000000	6.19605303e-01	6.17337216e-01	1.04341170e-01
28.60000000	6.13362051e-01	6.10837183e-01	1.18216815e-01
28.80000000	6.04006722e-01	6.04364955e-01	-1.70710040e-02
29.00000000	5.95380051e-01	5.97926320e-01	-1.23496478e-01
29.20000000	5.89303248e-01	5.91529303e-01	-1.09886011e-01
29.40000000	5.81045302e-01	5.85178251e-01	-2.07643880e-01
29.60000000	5.75805739e-01	5.78876718e-01	-1.57029936e-01
29.80000000	5.66701425e-01	5.72626959e-01	-3.08369851e-01
30.00000000	5.61273208e-01	5.66431684e-01	-2.73209099e-01
30.20000000	5.54216342e-01	5.60291557e-01	-3.27457196e-01
30.40000000	5.48899833e-01	5.54208442e-01	-2.91193171e-01
30.60000000	5.43894863e-01	5.48182807e-01	-2.39356458e-01
30.80000000	5.39692071e-01	5.42214061e-01	-1.43259479e-01
31.00000000	5.33461577e-01	5.36301841e-01	-1.64176586e-01
31.20000000	5.31125595e-01	5.30446919e-01	3.99186103e-02
31.40000000	5.27329181e-01	5.24650083e-01	1.60342454e-01
31.60000000	5.21497387e-01	5.18913880e-01	1.57326358e-01
31.80000000	5.18320069e-01	5.13242983e-01	3.14570950e-01
32.00000000	5.13139505e-01	5.07641946e-01	3.46547187e-01
32.20000000	5.04343013e-01	5.02116555e-01	1.42779508e-01

Long camera 1:

S	Total Int.	Background	Exp. sM(s)
2.00000000	1.43510811e+01	1.49349530e+01	-7.81886486e-02
2.20000000	1.32607575e+01	1.40447378e+01	-1.22804471e-01
2.40000000	1.23595579e+01	1.34606867e+01	-1.96327959e-01
2.60000000	1.16567894e+01	1.29745826e+01	-2.64074960e-01
2.80000000	1.11862984e+01	1.25693267e+01	-3.08089622e-01
3.00000000	1.09786841e+01	1.22140305e+01	-3.03424749e-01
3.20000000	1.08264458e+01	1.18867902e+01	-2.85451475e-01
3.40000000	1.05981751e+01	1.15775580e+01	-2.87616927e-01
3.60000000	1.02932951e+01	1.12778010e+01	-3.14265271e-01
3.80000000	9.85428290e+00	1.09833169e+01	-3.90622379e-01
4.00000000	9.32610553e+00	1.06922793e+01	-5.11087954e-01
4.20000000	8.79500243e+00	1.04040336e+01	-6.49549128e-01
4.40000000	8.40163847e+00	1.01165025e+01	-7.45850845e-01
4.60000000	8.22104145e+00	9.82768575e+00	-7.52014660e-01
4.80000000	8.25604876e+00	9.53638835e+00	-6.44439993e-01
5.00000000	8.44975612e+00	9.24239325e+00	-4.28805131e-01
5.20000000	8.76046723e+00	8.94642673e+00	-1.08086659e-01

5.40000000	9.06073599e+00	8.64979956e+00	2.56544294e-01
5.60000000	9.27759121e+00	8.35405223e+00	6.19078998e-01
5.80000000	9.31463832e+00	8.06062310e+00	9.02323333e-01
6.00000000	9.18929329e+00	7.77069157e+00	1.09534786e+00
6.20000000	8.85548039e+00	7.48514963e+00	1.13505423e+00
6.40000000	8.37736755e+00	7.20493051e+00	1.04145307e+00
6.60000000	7.81801136e+00	6.93095173e+00	8.44702694e-01
6.80000000	7.22381969e+00	6.66410703e+00	5.71126188e-01
7.00000000	6.65026930e+00	6.40528492e+00	2.67730588e-01
7.20000000	6.14348815e+00	6.15543232e+00	-1.39710757e-02
7.40000000	5.71415128e+00	5.91591085e+00	-2.52373787e-01
7.60000000	5.35205253e+00	5.68787559e+00	-4.48718542e-01
7.80000000	5.06822337e+00	5.47204053e+00	-5.75612296e-01
8.00000000	4.84094567e+00	5.26861777e+00	-6.49387931e-01
8.20000000	4.67493429e+00	5.07746074e+00	-6.50072370e-01
8.40000000	4.55323712e+00	4.89843431e+00	-5.91955749e-01
8.60000000	4.46869888e+00	4.73120951e+00	-4.77170046e-01
8.80000000	4.40867815e+00	4.57522726e+00	-3.20340853e-01
9.00000000	4.35291068e+00	4.42973955e+00	-1.56094914e-01
9.20000000	4.29126704e+00	4.29389369e+00	-5.62779845e-03
9.40000000	4.20769055e+00	4.16691081e+00	9.19936962e-02
9.60000000	4.09985956e+00	4.04796020e+00	1.23082698e-01
9.80000000	3.97538745e+00	3.93613206e+00	9.77362532e-02
10.00000000	3.84280969e+00	3.83046429e+00	3.22295006e-02
10.20000000	3.71593390e+00	3.73010422e+00	-3.87488516e-02
10.40000000	3.60498038e+00	3.63471248e+00	-8.50724266e-02
10.60000000	3.51247091e+00	3.54415504e+00	-9.47621712e-02
10.80000000	3.44144847e+00	3.45838982e+00	-5.29051212e-02
11.00000000	3.38980130e+00	3.37742043e+00	4.03235437e-02
11.20000000	3.34710316e+00	3.30122435e+00	1.55652153e-01
11.40000000	3.30446657e+00	3.22967404e+00	2.64000267e-01
11.60000000	3.25523012e+00	3.16256038e+00	3.39904655e-01
11.80000000	3.19775514e+00	3.09958423e+00	3.73732933e-01
12.00000000	3.13644654e+00	3.04032821e+00	3.79373487e-01
12.20000000	3.06658337e+00	2.98429779e+00	3.36388733e-01
12.40000000	2.99084069e+00	2.93111551e+00	2.52665656e-01
12.60000000	2.91580071e+00	2.88040316e+00	1.54842634e-01
12.80000000	2.84254944e+00	2.83174964e+00	4.88169397e-02
13.00000000	2.76890142e+00	2.78474850e+00	-7.39786708e-02
13.20000000	2.70283974e+00	2.73906337e+00	-1.74567661e-01
13.40000000	2.64054562e+00	2.69452181e+00	-2.68426472e-01
13.60000000	2.59218402e+00	2.65105670e+00	-3.02018570e-01
13.80000000	2.55052792e+00	2.60867802e+00	-3.07616103e-01
14.00000000	2.51634762e+00	2.56749415e+00	-2.78891185e-01
14.20000000	2.48983584e+00	2.52770734e+00	-2.12752198e-01
14.40000000	2.46806748e+00	2.48959179e+00	-1.24498316e-01
14.60000000	2.44382009e+00	2.45339599e+00	-5.69855478e-02
14.80000000	2.42011464e+00	2.41925658e+00	5.24920598e-03
15.00000000	2.40358042e+00	2.38711137e+00	1.03487332e-01
15.20000000	2.37094627e+00	2.35669713e+00	9.19027516e-02
15.40000000	2.33504291e+00	2.32768878e+00	4.86549389e-02
15.60000000	2.29103968e+00	2.29973564e+00	-5.89880942e-02
15.80000000	2.25172001e+00	2.27251202e+00	-1.44559731e-01
16.00000000	2.21914176e+00	2.24573872e+00	-1.89492865e-01
16.20000000	2.1880869e+00	2.21922605e+00	-2.22041926e-01
16.40000000	2.16250503e+00	2.19293048e+00	-2.27539080e-01

Long camera 2:

S	Total Int.	Background	Exp. sM(s)
2.00000000	1.63951108e+01	1.70205876e+01	-7.34965013e-02
2.20000000	1.51987051e+01	1.61345431e+01	-1.27604704e-01
2.40000000	1.41219002e+01	1.55528620e+01	-2.20815206e-01
2.60000000	1.33877641e+01	1.50388623e+01	-2.85450803e-01
2.80000000	1.29189120e+01	1.45893314e+01	-3.20588674e-01
3.00000000	1.27333645e+01	1.41856730e+01	-3.07135611e-01
3.20000000	1.26234229e+01	1.38106328e+01	-2.75083094e-01
3.40000000	1.23769290e+01	1.34548868e+01	-2.72395933e-01
3.60000000	1.20135667e+01	1.31104816e+01	-3.01201257e-01
3.80000000	1.15062734e+01	1.27723634e+01	-3.76683764e-01
4.00000000	1.08600051e+01	1.24368878e+01	-5.07163112e-01
4.20000000	1.01994408e+01	1.21037062e+01	-6.60782296e-01
4.40000000	9.72593920e+00	1.17716462e+01	-7.64643330e-01
4.60000000	9.51374564e+00	1.14365612e+01	-7.73392576e-01
4.80000000	9.55036209e+00	1.10935968e+01	-6.67729926e-01
5.00000000	9.77488871e+00	1.07417899e+01	-4.50065227e-01

5.20000000	1.01360078e+01	1.03851102e+01	-1.24729791e-01
5.40000000	1.04983629e+01	1.00289308e+01	2.52762079e-01
5.60000000	1.07521545e+01	9.67754296e+00	6.21833932e-01
5.80000000	1.08300913e+01	9.33275768e+00	9.30543296e-01
6.00000000	1.06501606e+01	8.99404781e+00	1.10480585e+00
6.20000000	1.02582863e+01	8.66042710e+00	1.14390747e+00
6.40000000	9.69393076e+00	8.33093324e+00	1.04708367e+00
6.60000000	9.01835159e+00	8.00528446e+00	8.35228662e-01
6.80000000	8.32668912e+00	7.68453138e+00	5.68241890e-01
7.00000000	7.63524056e+00	7.37095845e+00	2.50981574e-01
7.20000000	7.05257250e+00	7.06805974e+00	-1.57763434e-02
7.40000000	6.54475261e+00	6.77885884e+00	-2.55557186e-01
7.60000000	6.12098681e+00	6.50581823e+00	-4.49554331e-01
7.80000000	5.78428286e+00	6.25047709e+00	-5.81765986e-01
8.00000000	5.52888258e+00	6.01270159e+00	-6.43729282e-01
8.20000000	5.33050260e+00	5.79091937e+00	-6.51954774e-01
8.40000000	5.19457215e+00	5.58346259e+00	-5.85063412e-01
8.60000000	5.09299778e+00	5.38864741e+00	-4.71841384e-01
8.80000000	5.02452223e+00	5.20530982e+00	-3.05636140e-01
9.00000000	4.95096977e+00	5.03273236e+00	-1.46215454e-01
9.20000000	4.87510356e+00	4.87080637e+00	8.11655249e-03
9.40000000	4.76394210e+00	4.71951801e+00	8.84807449e-02
9.60000000	4.63843447e+00	4.57859582e+00	1.25464448e-01
9.80000000	4.49123750e+00	4.44676064e+00	9.80203946e-02
10.00000000	4.33475926e+00	4.32217222e+00	2.91220192e-02
10.20000000	4.17970589e+00	4.20320332e+00	-5.70217017e-02
10.40000000	4.04494022e+00	4.08920275e+00	-1.12572153e-01
10.60000000	3.94004771e+00	3.97992961e+00	-1.06220005e-01
10.80000000	3.85170265e+00	3.87535737e+00	-6.59219269e-02
11.00000000	3.78975602e+00	3.77581639e+00	4.06100271e-02
11.20000000	3.73720325e+00	3.68148460e+00	1.69510138e-01
11.40000000	3.68110134e+00	3.59245616e+00	2.81299204e-01
11.60000000	3.61880258e+00	3.50895656e+00	3.63131804e-01
11.80000000	3.54916223e+00	3.43109414e+00	4.06052237e-01
12.00000000	3.47179475e+00	3.35857005e+00	4.04546091e-01
12.20000000	3.38683598e+00	3.29069334e+00	3.56441660e-01
12.40000000	3.29970750e+00	3.22670038e+00	2.80561625e-01
12.60000000	3.20685797e+00	3.16579026e+00	1.63451474e-01
12.80000000	3.11745916e+00	3.10736926e+00	4.15627130e-02
13.00000000	3.02886734e+00	3.05101186e+00	-9.43552030e-02
13.20000000	2.95022933e+00	2.99650471e+00	-2.03849179e-01
13.40000000	2.87720778e+00	2.94379433e+00	-3.03098534e-01
13.60000000	2.81878385e+00	2.89300125e+00	-3.48896007e-01
13.80000000	2.76157177e+00	2.84432029e+00	-4.01477145e-01
14.00000000	2.73546055e+00	2.79791427e+00	-3.12501423e-01
14.20000000	2.71359529e+00	2.75317717e+00	-2.04150542e-01
14.40000000	2.69407645e+00	2.70960788e+00	-8.25405991e-02
14.60000000	2.67065616e+00	2.66728756e+00	1.84387780e-02
14.80000000	2.64587909e+00	2.62673961e+00	1.07838751e-01
15.00000000	2.61108133e+00	2.58842477e+00	1.31295435e-01
15.20000000	2.57317512e+00	2.55252286e+00	1.22982013e-01
15.40000000	2.51989841e+00	2.51880406e+00	6.69085921e-03
15.60000000	2.47699567e+00	2.48676123e+00	-6.12615628e-02
15.80000000	2.42988245e+00	2.45533793e+00	-1.63805008e-01
16.00000000	2.38965466e+00	2.42366391e+00	-2.24514614e-01
16.20000000	2.35446839e+00	2.39140947e+00	-2.50248019e-01
16.40000000	2.32360868e+00	2.35893066e+00	-2.45569161e-01

Long camera 3:

S	Total Int.	Background	Exp. sM(s)
2.00000000	1.21782430e+01	1.26453343e+01	-7.38756795e-02
2.20000000	1.12608621e+01	1.19302422e+01	-1.23437236e-01
2.40000000	1.04731196e+01	1.14560009e+01	-2.05910869e-01
2.60000000	9.88500962e+00	1.10455594e+01	-2.73180310e-01
2.80000000	9.50595602e+00	1.06926610e+01	-3.10752762e-01
3.00000000	9.34008384e+00	1.03805270e+01	-3.00690841e-01
3.20000000	9.23634889e+00	1.00958140e+01	-2.72418687e-01
3.40000000	9.06049701e+00	9.83152466e+00	-2.66641655e-01
3.60000000	8.80342931e+00	9.58029110e+00	-2.91922494e-01
3.80000000	8.43022280e+00	9.33706985e+00	-3.69068547e-01
4.00000000	7.97726590e+00	9.09836791e+00	-4.92880490e-01
4.20000000	7.52177387e+00	8.86209507e+00	-6.35216503e-01
4.40000000	7.18509842e+00	8.62542268e+00	-7.34738110e-01
4.60000000	7.01193981e+00	8.38547398e+00	-7.53476451e-01
4.80000000	7.05217639e+00	8.14025057e+00	-6.41596474e-01

5.00000000	7.20067801e+00	7.88928431e+00	-4.36418738e-01
5.20000000	7.45971791e+00	7.63480647e+00	-1.19251288e-01
5.40000000	7.72477716e+00	7.37978433e+00	2.52441153e-01
5.60000000	7.88985956e+00	7.12696716e+00	5.99441150e-01
5.80000000	7.93755364e+00	6.87852104e+00	8.92981079e-01
6.00000000	7.80664064e+00	6.63518485e+00	1.05931257e+00
6.20000000	7.53704593e+00	6.39660639e+00	1.10538693e+00
6.40000000	7.14188013e+00	6.16169468e+00	1.01809441e+00
6.60000000	6.66639269e+00	5.92954588e+00	8.20162130e-01
6.80000000	6.16451074e+00	5.70027685e+00	5.53795997e-01
7.00000000	5.67461775e+00	5.47522320e+00	2.54923287e-01
7.20000000	5.24593476e+00	5.25664300e+00	-1.46670242e-02
7.40000000	4.87660916e+00	5.04723514e+00	-2.50163152e-01
7.60000000	4.56599781e+00	4.84935267e+00	-4.44079257e-01
7.80000000	4.32414245e+00	4.66444533e+00	-5.69062832e-01
8.00000000	4.13949595e+00	4.49254091e+00	-6.28677565e-01
8.20000000	3.99963877e+00	4.33257285e+00	-6.30124316e-01
8.40000000	3.90262584e+00	4.18328675e+00	-5.63564441e-01
8.60000000	3.83325466e+00	4.04348440e+00	-4.47133112e-01
8.80000000	3.77762665e+00	3.91239210e+00	-3.03122969e-01
9.00000000	3.73040856e+00	3.78968299e+00	-1.40768985e-01
9.20000000	3.67390940e+00	3.67512426e+00	-3.04119107e-03
9.40000000	3.60438129e+00	3.56846427e+00	9.46121282e-02
9.60000000	3.51445146e+00	3.46912425e+00	1.25432571e-01
9.80000000	3.40652593e+00	3.37625836e+00	8.78552964e-02
10.00000000	3.29576885e+00	3.28885551e+00	2.10205049e-02
10.20000000	3.18861315e+00	3.20584277e+00	-5.48193309e-02
10.40000000	3.09601192e+00	3.12657035e+00	-1.01647377e-01
10.60000000	3.02107374e+00	3.05065686e+00	-1.02791339e-01
10.80000000	2.96298631e+00	2.97798962e+00	-5.44111305e-02
11.00000000	2.92097206e+00	2.90869905e+00	4.64135639e-02
11.20000000	2.88396658e+00	2.84302738e+00	1.61278463e-01
11.40000000	2.84652687e+00	2.78126683e+00	2.67491200e-01
11.60000000	2.80544187e+00	2.72367409e+00	3.48245154e-01
11.80000000	2.75793662e+00	2.67030910e+00	3.87222863e-01
12.00000000	2.70664234e+00	2.62092691e+00	3.92450891e-01
12.20000000	2.64700438e+00	2.57501098e+00	3.41093502e-01
12.40000000	2.58636841e+00	2.53205812e+00	2.65968472e-01
12.60000000	2.52194148e+00	2.49150034e+00	1.53946717e-01
12.80000000	2.46020449e+00	2.45277810e+00	3.87551792e-02
13.00000000	2.40036144e+00	2.41535489e+00	-8.06982360e-02
13.20000000	2.34447423e+00	2.37883133e+00	-1.90645562e-01
13.40000000	2.29529644e+00	2.34308808e+00	-2.73317948e-01
13.60000000	2.25134651e+00	2.30827215e+00	-3.35397497e-01
13.80000000	2.21266055e+00	2.27480740e+00	-3.77010570e-01
14.00000000	2.1821183e+00	2.24317262e+00	-3.43019124e-01
14.20000000	2.18144518e+00	2.21345310e+00	-2.05340853e-01
14.40000000	2.17167539e+00	2.18532975e+00	-8.99740211e-02
14.60000000	2.16436171e+00	2.15855817e+00	3.92537822e-02
14.80000000	2.14543347e+00	2.13306370e+00	8.58261708e-02
15.00000000	2.12958305e+00	2.10890551e+00	1.47073047e-01
15.20000000	2.09892358e+00	2.08594498e+00	9.45733190e-02
15.40000000	2.06981400e+00	2.06396021e+00	4.36774145e-02
15.60000000	2.03573211e+00	2.04251635e+00	-5.18155660e-02
15.80000000	1.99959697e+00	2.02121263e+00	-1.68971574e-01
16.00000000	1.97196578e+00	1.99984321e+00	-2.23036903e-01
16.20000000	1.94504756e+00	1.97835955e+00	-2.72778637e-01
16.40000000	1.93179972e+00	1.95691757e+00	-2.10500810e-01

Long camera 4:

S	Total Int.	Background	Exp. sM(s)
2.00000000	1.61642449e+01	1.67727627e+01	-7.25602303e-02
2.20000000	1.48708761e+01	1.57742641e+01	-1.25993427e-01
2.40000000	1.38236609e+01	1.51198837e+01	-2.05751225e-01
2.60000000	1.30626754e+01	1.45761658e+01	-2.69966410e-01
2.80000000	1.25364177e+01	1.41240271e+01	-3.14733633e-01
3.00000000	1.23016082e+01	1.37287583e+01	-3.11859964e-01
3.20000000	1.21793003e+01	1.33655100e+01	-2.84004954e-01
3.40000000	1.19153103e+01	1.30225366e+01	-2.89081118e-01
3.60000000	1.15791143e+01	1.26899561e+01	-3.15133515e-01
3.80000000	1.10842189e+01	1.23628436e+01	-3.93014265e-01
4.00000000	1.04561766e+01	1.20390309e+01	-5.25907534e-01
4.20000000	9.87661767e+00	1.17176688e+01	-6.59893602e-01
4.40000000	9.43445442e+00	1.13960356e+01	-7.57364895e-01
4.60000000	9.24901250e+00	1.10714119e+01	-7.57178713e-01

4.80000000	9.29988592e+00	1.07420580e+01	-6.44422702e-01
5.00000000	9.51487818e+00	1.04076458e+01	-4.28899892e-01
5.20000000	9.87422553e+00	1.00692892e+01	-1.00735121e-01
5.40000000	1.01899001e+01	9.72899594e+00	2.55821100e-01
5.60000000	1.04273635e+01	9.38916207e+00	6.19216912e-01
5.80000000	1.04750260e+01	9.05191576e+00	9.11855518e-01
6.00000000	1.03177202e+01	8.71886804e+00	1.10027044e+00
6.20000000	9.94163000e+00	8.39115869e+00	1.14560128e+00
6.40000000	9.40748443e+00	8.06982408e+00	1.06086900e+00
6.60000000	8.76845121e+00	7.75583961e+00	8.61703808e-01
6.80000000	8.08899748e+00	7.45024623e+00	5.83002004e-01
7.00000000	7.43621136e+00	7.15418474e+00	2.75948472e-01
7.20000000	6.85518353e+00	6.86892852e+00	-1.44074819e-02
7.40000000	6.35537692e+00	6.59623915e+00	-2.70211619e-01
7.60000000	5.94814188e+00	6.33757843e+00	-4.67010829e-01
7.80000000	5.61849246e+00	6.09372342e+00	-6.08298277e-01
8.00000000	5.37052873e+00	5.86468992e+00	-6.74083301e-01
8.20000000	5.19630035e+00	5.64985649e+00	-6.58275184e-01
8.40000000	5.06598265e+00	5.44850229e+00	-5.89733615e-01
8.60000000	4.97940977e+00	5.25975987e+00	-4.58388016e-01
8.80000000	4.91010093e+00	5.08268253e+00	-2.98802469e-01
9.00000000	4.83937014e+00	4.91636373e+00	-1.40946109e-01
9.20000000	4.76511968e+00	4.75999222e+00	9.91022485e-03
9.40000000	4.65809219e+00	4.61295652e+00	9.19746891e-02
9.60000000	4.53402791e+00	4.47464044e+00	1.27411272e-01
9.80000000	4.38283248e+00	4.34430677e+00	8.69072972e-02
10.00000000	4.22581432e+00	4.22111586e+00	1.11308354e-02
10.20000000	4.07908302e+00	4.10424888e+00	-6.25429377e-02
10.40000000	3.95309512e+00	3.99331970e+00	-1.04758848e-01
10.60000000	3.85165523e+00	3.88805058e+00	-9.92247058e-02
10.80000000	3.77414347e+00	3.78820044e+00	-4.00758515e-02
11.00000000	3.71630098e+00	3.69359606e+00	6.76181602e-02
11.20000000	3.66261211e+00	3.60412589e+00	1.81748835e-01
11.40000000	3.60175875e+00	3.51968855e+00	2.65819053e-01
11.60000000	3.54661794e+00	3.44017732e+00	3.58909152e-01
11.80000000	3.47406893e+00	3.36538965e+00	3.81060038e-01
12.00000000	3.39689945e+00	3.29500990e+00	3.71068565e-01
12.20000000	3.31690977e+00	3.22861768e+00	3.33629939e-01
12.40000000	3.23033970e+00	3.16585930e+00	2.52556071e-01
12.60000000	3.14168031e+00	3.10633770e+00	1.43357503e-01
12.80000000	3.05867274e+00	3.04959201e+00	3.81143988e-02
13.00000000	2.97680496e+00	2.99512615e+00	-7.95210466e-02
13.20000000	2.90105975e+00	2.94249303e+00	-1.85869364e-01
13.40000000	2.83336089e+00	2.89141499e+00	-2.69046467e-01
13.60000000	2.77614859e+00	2.84172532e+00	-3.13838718e-01
13.80000000	2.72740479e+00	2.79335670e+00	-3.25821764e-01
14.00000000	2.69121354e+00	2.74634669e+00	-2.81051228e-01
14.20000000	2.66205082e+00	2.70082352e+00	-2.03853484e-01
14.40000000	2.63460410e+00	2.65701196e+00	-1.21442079e-01
14.60000000	2.60607385e+00	2.61514300e+00	-5.06318955e-02
14.80000000	2.58410022e+00	2.57534267e+00	5.03279494e-02
15.00000000	2.55494303e+00	2.53754449e+00	1.02846756e-01
15.20000000	2.51774690e+00	2.50152491e+00	9.85695896e-02
15.40000000	2.47096482e+00	2.46699478e+00	2.47826540e-02
15.60000000	2.42695984e+00	2.43362447e+00	-4.27215704e-02
15.80000000	2.37960186e+00	2.40107808e+00	-1.41321631e-01
16.00000000	2.33904156e+00	2.36908906e+00	-2.02930348e-01
16.20000000	2.30459729e+00	2.33749882e+00	-2.28023566e-01
16.40000000	2.27177918e+00	2.30629351e+00	-2.45430601e-01

3.2.7 Electron diffraction intensities of FMN

Medium camera 1:

S	Total Int.	Background	Exp. sM(s)
9.20000000	1.38840579e+01	1.38917184e+01	-5.07329461e-03
9.40000000	1.35029888e+01	1.34005670e+01	7.18451148e-02
9.60000000	1.30510493e+01	1.29361052e+01	8.53010271e-02
9.80000000	1.26093868e+01	1.24957289e+01	8.91382346e-02
10.00000000	1.21306437e+01	1.20766647e+01	4.46968724e-02
10.20000000	1.16770118e+01	1.16765288e+01	4.21940672e-04
10.40000000	1.12870968e+01	1.12944785e+01	-6.79710341e-03
10.60000000	1.09643817e+01	1.09301830e+01	3.31656653e-02
10.80000000	1.06867862e+01	1.05835128e+01	1.05385898e-01

11.00000000	1.04318811e+01	1.02545097e+01	1.90266089e-01
11.20000000	1.01741260e+01	9.94321856e+00	2.60093216e-01
11.40000000	9.93719862e+00	9.64939969e+00	3.40011594e-01
11.60000000	9.66167913e+00	9.37246439e+00	3.57951855e-01
11.80000000	9.36426915e+00	9.11149848e+00	3.27354927e-01
12.00000000	9.05443125e+00	8.86524732e+00	2.56079392e-01
12.20000000	8.74241265e+00	8.63224949e+00	1.55694126e-01
12.40000000	8.45917548e+00	8.41131447e+00	7.05569242e-02
12.60000000	8.17764702e+00	8.20116656e+00	-3.61346256e-02
12.80000000	7.93333890e+00	8.00043451e+00	-1.07347143e-01
13.00000000	7.70378409e+00	7.80774325e+00	-1.73093435e-01
13.20000000	7.48870490e+00	7.62188568e+00	-2.30649781e-01
13.40000000	7.31306327e+00	7.44208984e+00	-2.32321295e-01
13.60000000	7.14009970e+00	7.26782251e+00	-2.39002844e-01
13.80000000	6.99185331e+00	7.09875215e+00	-2.07811739e-01
14.00000000	6.85167392e+00	6.93470827e+00	-1.67632257e-01
14.20000000	6.73404693e+00	6.77564529e+00	-8.71794165e-02
14.40000000	6.61397093e+00	6.62164190e+00	-1.66819745e-02
14.60000000	6.50438189e+00	6.47277312e+00	7.12967904e-02
14.80000000	6.37988745e+00	6.32903373e+00	1.18917846e-01
15.00000000	6.23198086e+00	6.19034577e+00	1.00887137e-01
15.20000000	6.07797323e+00	6.05658062e+00	5.36883209e-02
15.40000000	5.92144607e+00	5.92761182e+00	-1.60186911e-02
15.60000000	5.76687595e+00	5.80322041e+00	-9.76998285e-02
15.80000000	5.63514500e+00	5.68309822e+00	-1.33318287e-01
16.00000000	5.50319292e+00	5.56691378e+00	-1.83141665e-01
16.20000000	5.38739477e+00	5.45443359e+00	-1.99109380e-01
16.40000000	5.29590552e+00	5.34560359e+00	-1.52470796e-01
16.60000000	5.21482535e+00	5.24046855e+00	-8.12288407e-02
16.80000000	5.14938667e+00	5.13912404e+00	3.35489431e-02
17.00000000	5.07813078e+00	5.04166686e+00	1.22952701e-01
17.20000000	5.01063880e+00	4.94817190e+00	2.17136886e-01
17.40000000	4.93335369e+00	4.85868398e+00	2.67408428e-01
17.60000000	4.86274946e+00	4.77314915e+00	3.30382629e-01
17.80000000	4.77000314e+00	4.69139891e+00	2.98238392e-01
18.00000000	4.67673118e+00	4.61320141e+00	2.47883381e-01
18.20000000	4.58216827e+00	4.53827671e+00	1.76019760e-01
18.40000000	4.49626415e+00	4.46633048e+00	1.23318133e-01
18.60000000	4.41035417e+00	4.39704287e+00	5.63083338e-02
18.80000000	4.31700620e+00	4.33009789e+00	-5.68402249e-02
19.00000000	4.24895189e+00	4.26519555e+00	-7.23599736e-02
19.20000000	4.17556569e+00	4.20203801e+00	-1.20957639e-01
19.40000000	4.10634953e+00	4.14040016e+00	-1.59545485e-01
19.60000000	4.04046803e+00	4.08011026e+00	-1.90433033e-01
19.80000000	3.98572099e+00	4.02103160e+00	-1.73873326e-01
20.00000000	3.92858692e+00	3.96305393e+00	-1.73941657e-01
20.20000000	3.86705167e+00	3.90611143e+00	-2.01993003e-01
20.40000000	3.81991597e+00	3.85018163e+00	-1.60361116e-01
20.60000000	3.76699899e+00	3.79524340e+00	-1.53306305e-01
20.80000000	3.71417371e+00	3.74128942e+00	-1.50751978e-01
21.00000000	3.66313274e+00	3.68832859e+00	-1.43455974e-01
21.20000000	3.61207133e+00	3.63638713e+00	-1.41760184e-01
21.40000000	3.56485624e+00	3.58552164e+00	-1.23340335e-01
21.60000000	3.52264392e+00	3.53579562e+00	-8.03430913e-02
21.80000000	3.48808760e+00	3.48726785e+00	5.12451642e-03
22.00000000	3.44550626e+00	3.43999417e+00	3.52517621e-02
22.20000000	3.41880855e+00	3.39403783e+00	1.62022340e-01
22.40000000	3.38660715e+00	3.34945915e+00	2.48432723e-01
22.60000000	3.35239381e+00	3.30631113e+00	3.14994147e-01
22.80000000	3.31266404e+00	3.26463370e+00	3.35440930e-01
23.00000000	3.27421116e+00	3.22444141e+00	3.55008557e-01
23.20000000	3.23038699e+00	3.18570365e+00	3.25408014e-01
23.40000000	3.18429131e+00	3.14833997e+00	2.67207918e-01
23.60000000	3.13963837e+00	3.11221947e+00	2.07917839e-01
23.80000000	3.09207320e+00	3.07716440e+00	1.15310482e-01
24.00000000	3.04800914e+00	3.04296740e+00	3.97643941e-02
24.20000000	3.00014433e+00	3.00941132e+00	-7.45199468e-02
24.40000000	2.95976119e+00	2.97630324e+00	-1.35613171e-01
24.60000000	2.91529684e+00	2.94347289e+00	-2.35480592e-01
24.80000000	2.87639235e+00	2.91078844e+00	-2.93055675e-01
25.00000000	2.83939210e+00	2.87815248e+00	-3.36677625e-01
25.20000000	2.81167024e+00	2.84550238e+00	-2.99620128e-01
25.40000000	2.78049762e+00	2.81282001e+00	-2.91873920e-01
25.60000000	2.74888194e+00	2.78013646e+00	-2.87797275e-01
25.80000000	2.72740336e+00	2.74751759e+00	-1.88878527e-01
26.00000000	2.69894894e+00	2.71504459e+00	-1.54136282e-01
26.20000000	2.67401427e+00	2.68281978e+00	-8.59932182e-02
26.40000000	2.64990870e+00	2.65094584e+00	-1.03286246e-02

26.60000000	2.61845680e+00	2.61952933e+00	-1.08909792e-02
26.80000000	2.59724178e+00	2.58867987e+00	8.86394865e-02
27.00000000	2.56984764e+00	2.55848876e+00	1.19871528e-01
27.20000000	2.54592914e+00	2.52904353e+00	1.81605676e-01
27.40000000	2.51777434e+00	2.50043652e+00	1.89989382e-01
27.60000000	2.49128898e+00	2.47275417e+00	2.06878941e-01
27.80000000	2.46308090e+00	2.44605835e+00	1.93465059e-01
28.00000000	2.44093691e+00	2.42037101e+00	2.37916109e-01
28.20000000	2.41896264e+00	2.39566258e+00	2.74271432e-01
28.40000000	2.39455437e+00	2.37187197e+00	2.71591471e-01
28.60000000	2.36870234e+00	2.34892080e+00	2.40856233e-01
28.80000000	2.34053298e+00	2.32672400e+00	1.70926399e-01
29.00000000	2.31310537e+00	2.30519605e+00	9.95014420e-02
29.20000000	2.28449537e+00	2.28424783e+00	3.16436995e-03
29.40000000	2.26016315e+00	2.26377972e+00	-4.69687922e-02
29.60000000	2.23237960e+00	2.24369279e+00	-1.49249711e-01
29.80000000	2.20987734e+00	2.22390458e+00	-1.87963058e-01
30.00000000	2.18490294e+00	2.20434995e+00	-2.64663257e-01

Medium camera 2:

S	Total Int.	Background	Exp. sM(s)
9.20000000	9.68601441e+00	9.68865555e+00	-2.50793452e-03
9.40000000	9.41233714e+00	9.33540611e+00	7.74633308e-02
9.60000000	9.11554095e+00	9.00153035e+00	1.21590630e-01
9.80000000	8.75710912e+00	8.68512792e+00	8.12211068e-02
10.00000000	8.42141176e+00	8.38435693e+00	4.41951988e-02
10.20000000	8.08840025e+00	8.09767004e+00	-1.16764277e-02
10.40000000	7.80272309e+00	7.82461125e+00	-2.90924216e-02
10.60000000	7.56834250e+00	7.56505102e+00	4.61194945e-03
10.80000000	7.36696687e+00	7.31892366e+00	7.08938573e-02
11.00000000	7.19873911e+00	7.08618144e+00	1.74725175e-01
11.20000000	7.03329234e+00	6.86666397e+00	2.71782312e-01
11.40000000	6.86107473e+00	6.65996643e+00	3.44241170e-01
11.60000000	6.67862086e+00	6.46545907e+00	3.82444111e-01
11.80000000	6.47076305e+00	6.28229826e+00	3.53992198e-01
12.00000000	6.25089689e+00	6.10945886e+00	2.77807963e-01
12.20000000	6.03665726e+00	5.94582409e+00	1.86376964e-01
12.40000000	5.82258691e+00	5.79049696e+00	6.87186796e-02
12.60000000	5.63239838e+00	5.64255853e+00	-2.26879302e-02
12.80000000	5.45234907e+00	5.50101220e+00	-1.13231528e-01
13.00000000	5.29125747e+00	5.36487991e+00	-1.78399469e-01
13.20000000	5.14399143e+00	5.23331125e+00	-2.25291712e-01
13.40000000	5.01141160e+00	5.10578389e+00	-2.47677661e-01
13.60000000	4.89549855e+00	4.98198873e+00	-2.36103782e-01
13.80000000	4.77882232e+00	4.86178337e+00	-2.35482014e-01
14.00000000	4.68517839e+00	4.74516888e+00	-1.76994095e-01
14.20000000	4.59815661e+00	4.63219969e+00	-1.04359001e-01
14.40000000	4.52010940e+00	4.52298448e+00	-9.15350558e-03
14.60000000	4.43467607e+00	4.41759495e+00	5.64525370e-02
14.80000000	4.34544104e+00	4.31603688e+00	1.00828982e-01
15.00000000	4.25002070e+00	4.21822395e+00	1.13069221e-01
15.20000000	4.14950493e+00	4.12399109e+00	9.40376469e-02
15.40000000	4.03722389e+00	4.03318535e+00	1.54204157e-02
15.60000000	3.92450060e+00	3.94565243e+00	-8.36283959e-02
15.80000000	3.81914845e+00	3.86122852e+00	-1.72190013e-01
16.00000000	3.72784389e+00	3.77974388e+00	-2.19697398e-01
16.20000000	3.65289307e+00	3.70104684e+00	-2.10775774e-01
16.40000000	3.58645713e+00	3.62506780e+00	-1.74676730e-01
16.60000000	3.53554176e+00	3.55179975e+00	-7.59847480e-02
16.80000000	3.48793617e+00	3.48126447e+00	3.21965211e-02
17.00000000	3.43884726e+00	3.41349811e+00	1.26244537e-01
17.20000000	3.39863555e+00	3.34852406e+00	2.57402242e-01
17.40000000	3.33888120e+00	3.28634417e+00	2.78164504e-01
17.60000000	3.28832582e+00	3.22691998e+00	3.34914665e-01
17.80000000	3.22524313e+00	3.17012939e+00	3.09458865e-01
18.00000000	3.16077867e+00	3.11580083e+00	2.59837234e-01
18.20000000	3.09659642e+00	3.06373018e+00	1.95240912e-01
18.40000000	3.03504580e+00	3.01370843e+00	1.30273896e-01
18.60000000	2.97002144e+00	2.96552177e+00	2.82222996e-02
18.80000000	2.91431418e+00	2.91896148e+00	-2.99316607e-02
19.00000000	2.85961437e+00	2.87381096e+00	-9.38597676e-02
19.20000000	2.80813672e+00	2.82986515e+00	-1.47422579e-01
19.40000000	2.76361810e+00	2.78695460e+00	-1.62445426e-01
19.60000000	2.72041674e+00	2.74492733e+00	-1.75016501e-01
19.80000000	2.67648372e+00	2.70366206e+00	-1.99037865e-01

20.00000000	2.64034038e+00	2.66307320e+00	-1.70726206e-01
20.20000000	2.59946054e+00	2.62310087e+00	-1.82049702e-01
20.40000000	2.56417793e+00	2.58372747e+00	-1.54354793e-01
20.60000000	2.52559697e+00	2.54495641e+00	-1.56703796e-01
20.80000000	2.48869775e+00	2.50681379e+00	-1.50315821e-01
21.00000000	2.45350950e+00	2.46934041e+00	-1.34630746e-01
21.20000000	2.41327513e+00	2.43259421e+00	-1.68365334e-01
21.40000000	2.38267212e+00	2.39665873e+00	-1.24887733e-01
21.60000000	2.35167807e+00	2.36160414e+00	-9.07870363e-02
21.80000000	2.32548504e+00	2.32748929e+00	-1.87723613e-02
22.00000000	2.30060522e+00	2.29435994e+00	5.98843864e-02
22.20000000	2.27870540e+00	2.26225555e+00	1.61425898e-01
22.40000000	2.25402500e+00	2.23122065e+00	2.28940760e-01
22.60000000	2.23117720e+00	2.20129323e+00	3.06809556e-01
22.80000000	2.20495795e+00	2.17248657e+00	3.40783408e-01
23.00000000	2.17891148e+00	2.14478453e+00	3.65966730e-01
23.20000000	2.14907324e+00	2.11813360e+00	3.38883135e-01
23.40000000	2.11908527e+00	2.09244455e+00	2.97925587e-01
23.60000000	2.08772405e+00	2.06759483e+00	2.29759505e-01
23.80000000	2.05424070e+00	2.04343954e+00	1.25801401e-01
24.00000000	2.02431641e+00	2.01982239e+00	5.33989921e-02
24.20000000	1.99273581e+00	1.99658550e+00	-4.66608895e-02
24.40000000	1.96205990e+00	1.97360050e+00	-1.42678551e-01
24.60000000	1.92949423e+00	1.95077298e+00	-2.68333251e-01
24.80000000	1.90638082e+00	1.92803806e+00	-2.78573070e-01
25.00000000	1.87915060e+00	1.90534522e+00	-3.43699110e-01
25.20000000	1.85615805e+00	1.88267703e+00	-3.54961699e-01
25.40000000	1.83444535e+00	1.86004421e+00	-3.49567520e-01
25.60000000	1.81662137e+00	1.83746767e+00	-2.90435190e-01
25.80000000	1.80133526e+00	1.81496830e+00	-1.93795365e-01
26.00000000	1.78105514e+00	1.79257606e+00	-1.67102433e-01
26.20000000	1.76633914e+00	1.77034154e+00	-5.92330907e-02
26.40000000	1.74697778e+00	1.74831891e+00	-2.02513093e-02
26.60000000	1.72792287e+00	1.72657962e+00	2.06943181e-02
26.80000000	1.70995497e+00	1.70520283e+00	7.46876289e-02
27.00000000	1.68980507e+00	1.68426313e+00	8.88415817e-02
27.20000000	1.67277560e+00	1.66382640e+00	1.46300235e-01
27.40000000	1.65753149e+00	1.64394318e+00	2.26479680e-01
27.60000000	1.63957339e+00	1.62464659e+00	2.53581060e-01
27.80000000	1.62210833e+00	1.60596453e+00	2.79456658e-01
28.00000000	1.60437543e+00	1.58791792e+00	2.90197852e-01
28.20000000	1.58409120e+00	1.57051881e+00	2.43703792e-01
28.40000000	1.56781054e+00	1.55376831e+00	2.56665896e-01
28.60000000	1.54861575e+00	1.53763939e+00	2.04159544e-01
28.80000000	1.53069940e+00	1.52208483e+00	1.62999770e-01
29.00000000	1.51206437e+00	1.50704044e+00	9.66756118e-02
29.20000000	1.49497137e+00	1.49243254e+00	4.96732415e-02
29.40000000	1.47301071e+00	1.47818289e+00	-1.02870923e-01
29.60000000	1.45716053e+00	1.46422493e+00	-1.42810135e-01
29.80000000	1.44157297e+00	1.45049293e+00	-1.83258226e-01
30.00000000	1.42342859e+00	1.43693561e+00	-2.81996217e-01

Medium camera 3:

S	Total Int.	Background	Exp. sM(s)
9.20000000	1.35219030e+01	1.35088139e+01	8.91416662e-03
9.40000000	1.31402208e+01	1.30178282e+01	8.83780782e-02
9.60000000	1.26846711e+01	1.25539834e+01	9.99365342e-02
9.80000000	1.22181819e+01	1.21149126e+01	8.35366872e-02
10.00000000	1.17366704e+01	1.16981527e+01	3.29263361e-02
10.20000000	1.12825105e+01	1.13015536e+01	-1.71869154e-02
10.40000000	1.08970586e+01	1.09243375e+01	-2.59695700e-02
10.60000000	1.05684028e+01	1.05660841e+01	2.32613862e-03
10.80000000	1.02909840e+01	1.02264287e+01	6.81761073e-02
11.00000000	1.00746728e+01	9.90500482e+00	1.88424725e-01
11.20000000	9.84396657e+00	9.60131581e+00	2.83053759e-01
11.40000000	9.60312282e+00	9.31463458e+00	3.53075141e-01
11.60000000	9.34012117e+00	9.04405138e+00	3.79742374e-01
11.80000000	9.04536672e+00	8.78847024e+00	3.44926750e-01
12.00000000	8.73964733e+00	8.54659336e+00	2.71060949e-01
12.20000000	8.43410343e+00	8.31702485e+00	1.71739131e-01
12.40000000	8.14319576e+00	8.09870653e+00	6.81178405e-02
12.60000000	7.87366270e+00	7.89055010e+00	-2.69665891e-02
12.80000000	7.62278122e+00	7.69137477e+00	-1.14153508e-01
13.00000000	7.39847933e+00	7.50000049e+00	-1.75969988e-01
13.20000000	7.19449762e+00	7.31537814e+00	-2.18118992e-01

13.40000000	7.01012803e+00	7.13685629e+00	-2.37942106e-01
13.60000000	6.84053815e+00	6.96402118e+00	-2.41149356e-01
13.80000000	6.68398980e+00	6.79662721e+00	-2.28701111e-01
14.00000000	6.55095547e+00	6.63454931e+00	-1.76396866e-01
14.20000000	6.43657034e+00	6.47772321e+00	-9.02123563e-02
14.40000000	6.31726307e+00	6.32617271e+00	-2.02806472e-02
14.60000000	6.20906417e+00	6.17990977e+00	6.88770822e-02
14.80000000	6.08766145e+00	6.03886664e+00	1.19585876e-01
15.00000000	5.94699288e+00	5.90290700e+00	1.12027538e-01
15.20000000	5.79895495e+00	5.77185787e+00	7.13592944e-02
15.40000000	5.64913350e+00	5.64558116e+00	9.69006246e-03
15.60000000	5.48515776e+00	5.52389756e+00	-1.09404789e-01
15.80000000	5.35055906e+00	5.40658391e+00	-1.63724937e-01
16.00000000	5.22962515e+00	5.29336971e+00	-1.92677444e-01
16.20000000	5.11917704e+00	5.18401882e+00	-2.02629823e-01
16.40000000	5.03093974e+00	5.07843731e+00	-1.53385802e-01
16.60000000	4.95052881e+00	4.97661662e+00	-8.70185172e-02
16.80000000	4.88582020e+00	4.87859356e+00	2.48857726e-02
17.00000000	4.82204794e+00	4.78439899e+00	1.33774819e-01
17.20000000	4.75555270e+00	4.69403906e+00	2.25399626e-01
17.40000000	4.68317175e+00	4.60751123e+00	2.85727566e-01
17.60000000	4.60042866e+00	4.52474358e+00	2.94394008e-01
17.80000000	4.52085805e+00	4.44557320e+00	3.01439249e-01
18.00000000	4.43430612e+00	4.36974714e+00	2.65933346e-01
18.20000000	4.34346888e+00	4.29697018e+00	1.96947216e-01
18.40000000	4.25312911e+00	4.22696191e+00	1.13906059e-01
18.60000000	4.16650311e+00	4.15944208e+00	3.15751885e-02
18.80000000	4.09024901e+00	4.09412276e+00	-1.77880819e-02
19.00000000	4.00969321e+00	4.03071393e+00	-9.90875627e-02
19.20000000	3.94193011e+00	3.96895273e+00	-1.30723188e-01
19.40000000	3.87318015e+00	3.90862550e+00	-1.75928835e-01
19.60000000	3.81576680e+00	3.84954993e+00	-1.72006963e-01
19.80000000	3.75816388e+00	3.79156496e+00	-1.74424357e-01
20.00000000	3.70489372e+00	3.73454790e+00	-1.58810009e-01
20.20000000	3.64508342e+00	3.67842438e+00	-1.83091260e-01
20.40000000	3.59776261e+00	3.62317636e+00	-1.43090028e-01
20.60000000	3.54173267e+00	3.56880771e+00	-1.56283514e-01
20.80000000	3.49048786e+00	3.51534913e+00	-1.47101856e-01
21.00000000	3.43876342e+00	3.46284481e+00	-1.46038634e-01
21.20000000	3.38465001e+00	3.41135374e+00	-1.65951440e-01
21.40000000	3.34217520e+00	3.36095498e+00	-1.19575332e-01
21.60000000	3.29942623e+00	3.31171547e+00	-8.01541135e-02
21.80000000	3.26123602e+00	3.26369548e+00	-1.64280960e-02
22.00000000	3.22866311e+00	3.21694914e+00	8.01092353e-02
22.20000000	3.19495505e+00	3.17153035e+00	1.63967620e-01
22.40000000	3.16011446e+00	3.12751571e+00	2.33479898e-01
22.60000000	3.12495735e+00	3.08497938e+00	2.92871369e-01
22.80000000	3.08668557e+00	3.04397011e+00	3.19948041e-01
23.00000000	3.05095675e+00	3.00449585e+00	3.55667269e-01
23.20000000	3.00720259e+00	2.96651236e+00	3.18223329e-01
23.40000000	2.96276691e+00	2.92992868e+00	2.62263899e-01
23.60000000	2.91851334e+00	2.89460510e+00	1.94926153e-01
23.80000000	2.87394515e+00	2.86035592e+00	1.13071150e-01
24.00000000	2.83222763e+00	2.82696275e+00	4.46971556e-02
24.20000000	2.78871915e+00	2.79419833e+00	-4.74540863e-02
24.40000000	2.74389148e+00	2.76186505e+00	-1.58789488e-01
24.60000000	2.70228327e+00	2.72979816e+00	-2.47954682e-01
24.80000000	2.66712959e+00	2.69785855e+00	-2.82475298e-01
25.00000000	2.63232286e+00	2.66593173e+00	-3.15169957e-01
25.20000000	2.60436192e+00	2.63394200e+00	-2.83004674e-01
25.40000000	2.57068442e+00	2.60186807e+00	-3.04421567e-01
25.60000000	2.54087254e+00	2.56974142e+00	-2.87594479e-01
25.80000000	2.51998343e+00	2.53762070e+00	-1.79318190e-01
26.00000000	2.49022461e+00	2.50557790e+00	-1.59318750e-01
26.20000000	2.46946461e+00	2.47370728e+00	-4.49357768e-02
26.40000000	2.43777063e+00	2.44210593e+00	-4.68660989e-02
26.60000000	2.41525289e+00	2.41088628e+00	4.81780626e-02
26.80000000	2.38577120e+00	2.38015791e+00	6.32042639e-02
27.00000000	2.35864438e+00	2.35003014e+00	9.89708925e-02
27.20000000	2.33392284e+00	2.32060148e+00	1.56141025e-01
27.40000000	2.30332699e+00	2.29196154e+00	1.35872030e-01
27.60000000	2.27671216e+00	2.26417848e+00	1.52783705e-01
27.80000000	2.26033153e+00	2.23727314e+00	2.86519904e-01
28.00000000	2.23280637e+00	2.21121773e+00	2.73370611e-01
28.20000000	2.20789432e+00	2.18597165e+00	2.82812096e-01
28.40000000	2.18298573e+00	2.16148790e+00	2.82462010e-01
28.60000000	2.15639780e+00	2.13771050e+00	2.50013634e-01
28.80000000	2.12580334e+00	2.11458176e+00	1.52834619e-01

29.00000000	2.10071430e+00	2.09204494e+00	1.20175011e-01
29.20000000	2.06969910e+00	2.07003567e+00	-4.74773956e-03
29.40000000	2.04577917e+00	2.04848359e+00	-3.88139987e-02
29.60000000	2.01651755e+00	2.02731767e+00	-1.57688001e-01
29.80000000	1.99282636e+00	2.00648157e+00	-2.02805468e-01
30.00000000	1.96730280e+00	1.98593020e+00	-2.81390645e-01

Long camera 1:

S	Total Int.	Background	Exp. sM(s)
3.00000000	1.46503514e+01	1.65584710e+01	-3.45705746e-01
3.20000000	1.44800921e+01	1.63073222e+01	-3.58558952e-01
3.40000000	1.41900824e+01	1.60558193e+01	-3.95090731e-01
3.60000000	1.38276529e+01	1.57889631e+01	-4.47193175e-01
3.80000000	1.33564973e+01	1.54959067e+01	-5.24638930e-01
4.00000000	1.27710863e+01	1.51695821e+01	-6.32448738e-01
4.20000000	1.22374563e+01	1.48085886e+01	-7.29222486e-01
4.40000000	1.19110649e+01	1.44143189e+01	-7.64123348e-01
4.60000000	1.18490530e+01	1.39915201e+01	-7.04380119e-01
4.80000000	1.19959520e+01	1.35472701e+01	-5.49655167e-01
5.00000000	1.22444749e+01	1.30897280e+01	-3.22868881e-01
5.20000000	1.25483483e+01	1.26270114e+01	-3.23946590e-02
5.40000000	1.28056774e+01	1.21658562e+01	2.83994366e-01
5.60000000	1.29749990e+01	1.17114853e+01	6.04165617e-01
5.80000000	1.29783917e+01	1.12678950e+01	8.80455597e-01
6.00000000	1.28281624e+01	1.08383075e+01	1.10156771e+00
6.20000000	1.24296233e+01	1.04251267e+01	1.19210819e+00
6.40000000	1.18697657e+01	1.00300544e+01	1.17388718e+00
6.60000000	1.11387901e+01	9.65327163e+00	1.01565796e+00
6.80000000	1.02861165e+01	9.29373407e+00	7.26102160e-01
7.00000000	9.37875201e+00	8.94993444e+00	3.35390494e-01
7.20000000	8.55961973e+00	8.62052270e+00	-5.08671394e-02
7.40000000	7.85518571e+00	8.30476026e+00	-4.00595750e-01
7.60000000	7.31502089e+00	8.00231697e+00	-6.52742227e-01
7.80000000	6.92464340e+00	7.71309288e+00	-7.97333322e-01
8.00000000	6.68454498e+00	7.43699160e+00	-8.09409671e-01
8.20000000	6.52821236e+00	7.17361389e+00	-7.37744273e-01
8.40000000	6.42939130e+00	6.92275753e+00	-5.98645314e-01
8.60000000	6.34872682e+00	6.68401848e+00	-4.31403395e-01
8.80000000	6.27019961e+00	6.45674967e+00	-2.54251842e-01
9.00000000	6.17508768e+00	6.24010988e+00	-9.37803782e-02
9.20000000	6.05982670e+00	6.03324364e+00	4.05360961e-02
9.40000000	5.90092576e+00	5.83564819e+00	1.05148416e-01
9.60000000	5.71353633e+00	5.64722281e+00	1.12729718e-01
9.80000000	5.51080058e+00	5.46806858e+00	7.65852870e-02
10.00000000	5.29874196e+00	5.29828321e+00	8.65846565e-04
10.20000000	5.11475758e+00	5.13792679e+00	-4.59963608e-02
10.40000000	4.96139994e+00	4.98718213e+00	-5.37647856e-02
10.60000000	4.83108408e+00	4.84600177e+00	-3.26305058e-01
10.80000000	4.73728118e+00	4.71410456e+00	5.30975666e-02
11.00000000	4.66268744e+00	4.59086260e+00	1.72096915e-01
11.20000000	4.59640882e+00	4.47535976e+00	3.02936444e-01
11.40000000	4.51741169e+00	4.36654108e+00	3.93887279e-01
11.60000000	4.41540166e+00	4.26355295e+00	4.13140192e-01
11.80000000	4.30091678e+00	4.16582738e+00	3.82650254e-01
12.00000000	4.18223671e+00	4.07286367e+00	3.22249075e-01
12.20000000	4.05454753e+00	3.98416252e+00	2.15527650e-01
12.40000000	3.92828058e+00	3.89949130e+00	9.15470686e-02
12.60000000	3.81149284e+00	3.81865420e+00	-2.36295831e-02
12.80000000	3.70617228e+00	3.74136255e+00	-1.20393427e-01
13.00000000	3.61077265e+00	3.66726669e+00	-2.00264277e-01
13.20000000	3.52535419e+00	3.59607916e+00	-2.59607615e-01
13.40000000	3.44877735e+00	3.52771971e+00	-2.99861593e-01
13.60000000	3.38689983e+00	3.46218268e+00	-2.95722903e-01
13.80000000	3.33120427e+00	3.39939664e+00	-2.76829947e-01
14.00000000	3.28726084e+00	3.33917170e+00	-2.17644435e-01
14.20000000	3.26297455e+00	3.28106825e+00	-7.83069796e-02
14.40000000	3.22905737e+00	3.22447500e+00	2.04641633e-02
14.60000000	3.18952179e+00	3.16896945e+00	9.46882715e-02
14.80000000	3.14303001e+00	3.11438782e+00	1.36111642e-01
15.00000000	3.08866126e+00	3.06072630e+00	1.36903590e-01
15.20000000	3.02867352e+00	3.00804637e+00	1.04231325e-01
15.40000000	2.95792201e+00	2.95647151e+00	7.55554465e-03
15.60000000	2.88676133e+00	2.90615550e+00	-1.04106288e-01
15.80000000	2.82429711e+00	2.85715697e+00	-1.81714130e-01
16.00000000	2.76996356e+00	2.80937502e+00	-2.24456840e-01

Long camera 2:

S	Total Int.	Background	Exp. sM(s)
3.00000000	1.43583753e+01	1.62521534e+01	-3.49574247e-01
3.20000000	1.42181884e+01	1.59899933e+01	-3.54582742e-01
3.40000000	1.39145888e+01	1.57275754e+01	-3.91932906e-01
3.60000000	1.35374308e+01	1.54502029e+01	-4.45688623e-01
3.80000000	1.30598578e+01	1.51480391e+01	-5.23836038e-01
4.00000000	1.24460357e+01	1.48152447e+01	-6.39667872e-01
4.20000000	1.19473605e+01	1.44512678e+01	-7.27715426e-01
4.40000000	1.16115581e+01	1.40572259e+01	-7.65509386e-01
4.60000000	1.15520666e+01	1.36374143e+01	-7.02343940e-01
4.80000000	1.16811523e+01	1.31983524e+01	-5.51777992e-01
5.00000000	1.19172685e+01	1.27477657e+01	-3.25742228e-01
5.20000000	1.22176737e+01	1.22931410e+01	-3.19226755e-02
5.40000000	1.24624444e+01	1.18403976e+01	2.83694258e-01
5.60000000	1.26124059e+01	1.13940509e+01	5.98802644e-01
5.80000000	1.26400907e+01	1.09574281e+01	8.90669161e-01
6.00000000	1.24583287e+01	1.05330309e+01	1.09672008e+00
6.20000000	1.20911549e+01	1.01230596e+01	1.20538565e+00
6.40000000	1.15306762e+01	9.72911831e+00	1.18509919e+00
6.60000000	1.07923707e+01	9.35197376e+00	1.01653622e+00
6.80000000	9.94375132e+00	8.99169805e+00	7.19993290e-01
7.00000000	9.05674053e+00	8.64782269e+00	3.30999492e-01
7.20000000	8.25556073e+00	8.31961091e+00	-5.54306295e-02
7.40000000	7.57027212e+00	8.00656034e+00	-4.03235933e-01
7.60000000	7.04031552e+00	7.70828677e+00	-6.58587523e-01
7.80000000	6.66572867e+00	7.42443740e+00	-7.97087750e-01
8.00000000	6.42907503e+00	7.15447138e+00	-8.11125019e-01
8.20000000	6.27913148e+00	6.89756459e+00	-7.35208991e-01
8.40000000	6.18180527e+00	6.65311345e+00	-5.95058052e-01
8.60000000	6.09928700e+00	6.42046318e+00	-4.30204960e-01
8.80000000	6.02037505e+00	6.19888225e+00	-2.53410746e-01
9.00000000	5.92750560e+00	5.98752493e+00	-9.02165793e-02
9.20000000	5.81070797e+00	5.78558167e+00	3.99548467e-02
9.40000000	5.65037032e+00	5.59265281e+00	9.70102483e-02
9.60000000	5.47341160e+00	5.40867726e+00	1.14898643e-01
9.80000000	5.27583549e+00	5.23364018e+00	7.90107742e-02
10.00000000	5.07439071e+00	5.06755036e+00	1.34983412e-02
10.20000000	4.88862731e+00	4.91049203e+00	-4.54170695e-02
10.40000000	4.73207780e+00	4.76287176e+00	-6.72403571e-02
10.60000000	4.60785464e+00	4.62484991e+00	-3.89525908e-02
10.80000000	4.51698826e+00	4.49612411e+00	5.01171146e-02
11.00000000	4.44703497e+00	4.37592498e+00	1.78753026e-01
11.20000000	4.37636333e+00	4.26319369e+00	2.97312306e-01
11.40000000	4.29700344e+00	4.15681777e+00	3.84456736e-01
11.60000000	4.20458855e+00	4.05581826e+00	4.25496226e-01
11.80000000	4.09048933e+00	3.95942397e+00	3.90605104e-01
12.00000000	3.96973589e+00	3.86708249e+00	3.18545257e-01
12.20000000	3.84682240e+00	3.77835632e+00	2.21071296e-01
12.40000000	3.72284659e+00	3.69305544e+00	1.00028383e-01
12.60000000	3.60607739e+00	3.61108590e+00	-1.74759692e-02
12.80000000	3.49528453e+00	3.53236043e+00	-1.34349691e-01
13.00000000	3.40117196e+00	3.45675504e+00	-2.09034196e-01
13.20000000	3.31516964e+00	3.38405413e+00	-2.68694067e-01
13.40000000	3.24134087e+00	3.31410866e+00	-2.94223412e-01
13.60000000	3.17602172e+00	3.24676763e+00	-2.96339159e-01
13.80000000	3.12213093e+00	3.18186051e+00	-2.59052295e-01
14.00000000	3.07913836e+00	3.11915807e+00	-1.79624098e-01
14.20000000	3.03933098e+00	3.05840239e+00	-8.85475300e-02
14.40000000	3.00251759e+00	2.99943956e+00	1.47772986e-02
14.60000000	2.95707821e+00	2.94222972e+00	7.36815191e-02
14.80000000	2.90722450e+00	2.88684421e+00	1.04483771e-01
15.00000000	2.85726528e+00	2.83328636e+00	1.26949337e-01
15.20000000	2.80023037e+00	2.78137948e+00	1.03018533e-01
15.40000000	2.73544483e+00	2.73092100e+00	2.55104355e-02
15.60000000	2.66649162e+00	2.68177293e+00	-8.88920866e-02
15.80000000	2.60631719e+00	2.63385718e+00	-1.65207103e-01
16.00000000	2.54801595e+00	2.58709133e+00	-2.41663702e-01

Long camera 3:

S	Total Int.	Background	Exp. sM(s)
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3.00000000	8.69857302e+00	9.81177253e+00	-3.40366484e-01
3.20000000	8.57641971e+00	9.65525268e+00	-3.57553098e-01
3.40000000	8.39565757e+00	9.50015318e+00	-3.95286791e-01
3.60000000	8.17892258e+00	9.33799478e+00	-4.46847531e-01
3.80000000	7.89149365e+00	9.16133404e+00	-5.26712970e-01
4.00000000	7.53053696e+00	8.96437209e+00	-6.39792781e-01
4.20000000	7.22837862e+00	8.74509336e+00	-7.28431551e-01
4.40000000	7.02520139e+00	8.50362383e+00	-7.64974894e-01
4.60000000	6.97929001e+00	8.24313935e+00	-7.05278261e-01
4.80000000	7.06320156e+00	7.96876012e+00	-5.45465165e-01
5.00000000	7.18112483e+00	7.68656345e+00	-3.28780624e-01
5.20000000	7.36118612e+00	7.40285862e+00	-2.92720700e-02
5.40000000	7.49093742e+00	7.12236751e+00	2.79440436e-01
5.60000000	7.58389751e+00	6.84854851e+00	6.01288632e-01
5.80000000	7.58715492e+00	6.58359125e+00	8.84117659e-01
6.00000000	7.49139695e+00	6.32901011e+00	1.10196080e+00
6.20000000	7.26886006e+00	6.08595253e+00	1.20507459e+00
6.40000000	6.93057663e+00	5.85529976e+00	1.17530651e+00
6.60000000	6.50579696e+00	5.63722232e+00	1.01691797e+00
6.80000000	6.00398409e+00	5.43101727e+00	7.17393124e-01
7.00000000	5.48020916e+00	5.23558991e+00	3.27056693e-01
7.20000000	5.01044288e+00	5.04962133e+00	-5.58625647e-02
7.40000000	4.60712797e+00	4.87180097e+00	-4.02023865e-01
7.60000000	4.29910533e+00	4.70106585e+00	-6.49831354e-01
7.80000000	4.08102780e+00	4.53672459e+00	-7.83480435e-01
8.00000000	3.93734806e+00	4.37849911e+00	-8.06031553e-01
8.20000000	3.84809484e+00	4.22641820e+00	-7.34014328e-01
8.40000000	3.78886127e+00	4.08078360e+00	-6.00901141e-01
8.60000000	3.74370606e+00	3.94177250e+00	-4.32133350e-01
8.80000000	3.69892847e+00	3.80927997e+00	-2.54928276e-01
9.00000000	3.64516969e+00	3.68297867e+00	-9.23928239e-02
9.20000000	3.57431693e+00	3.56250036e+00	3.05157672e-02
9.40000000	3.48260657e+00	3.44770558e+00	9.51558552e-02
9.60000000	3.37951992e+00	3.33859916e+00	1.17665913e-01
9.80000000	3.25295108e+00	3.23522433e+00	5.36970950e-02
10.00000000	3.14262661e+00	3.13764116e+00	1.58891788e-02
10.20000000	3.03470577e+00	3.04559908e+00	-3.64827312e-02
10.40000000	2.94152057e+00	2.95903594e+00	-6.15605255e-02
10.60000000	2.87446877e+00	2.87785080e+00	-1.24570371e-02
10.80000000	2.81793654e+00	2.80174663e+00	6.24078631e-02
11.00000000	2.77551680e+00	2.73040379e+00	1.81747146e-01
11.20000000	2.73411595e+00	2.66343915e+00	2.97202248e-01
11.40000000	2.68517197e+00	2.60045738e+00	3.71375538e-01
11.60000000	2.63158744e+00	2.54111491e+00	4.13000357e-01
11.80000000	2.56424270e+00	2.48505078e+00	3.76034457e-01
12.00000000	2.49758523e+00	2.43190166e+00	3.24109655e-01
12.20000000	2.42445982e+00	2.38123873e+00	2.21438237e-01
12.40000000	2.35085061e+00	2.33283819e+00	9.57434786e-02
12.60000000	2.28195670e+00	2.28658083e+00	-2.54808532e-02
12.80000000	2.22258538e+00	2.24231621e+00	-1.12631093e-01
13.00000000	2.16550705e+00	2.19984856e+00	-2.02941041e-01
13.20000000	2.11755960e+00	2.15909366e+00	-2.53925825e-01
13.40000000	2.07010172e+00	2.12012258e+00	-3.16151308e-01
13.60000000	2.03799101e+00	2.08306981e+00	-2.94311670e-01
13.80000000	2.00651300e+00	2.04787948e+00	-2.78755368e-01
14.00000000	1.98708242e+00	2.01436309e+00	-1.89603049e-01
14.20000000	1.97100978e+00	1.98213406e+00	-7.96943148e-02
14.40000000	1.95359951e+00	1.95082511e+00	2.04792314e-02
14.60000000	1.93088531e+00	1.92027428e+00	8.06765319e-02
14.80000000	1.90524178e+00	1.89052949e+00	1.15175078e-01
15.00000000	1.87802792e+00	1.86165353e+00	1.31934188e-01
15.20000000	1.84540001e+00	1.83360214e+00	9.78007878e-02
15.40000000	1.80870473e+00	1.80631360e+00	2.03859115e-02
15.60000000	1.76850934e+00	1.77974872e+00	-9.85163188e-02
15.80000000	1.73416186e+00	1.75387540e+00	-1.77591775e-01
16.00000000	1.70442592e+00	1.72857547e+00	-2.23532522e-01

Long camera 4:

S	Total Int.	Background	Exp. sM(s)
3.00000000	1.02070765e+01	1.15309728e+01	-3.44436564e-01
3.20000000	1.00864181e+01	1.13775376e+01	-3.63135027e-01
3.40000000	9.91795101e+00	1.12224793e+01	-3.95224270e-01
3.60000000	9.68343051e+00	1.10544410e+01	-4.46484607e-01
3.80000000	9.37820556e+00	1.08644217e+01	-5.19827134e-01
4.00000000	8.96313960e+00	1.06462718e+01	-6.32383718e-01

4.20000000 8.60061642e+00 1.03988879e+01 -7.26302673e-01
4.40000000 8.36983334e+00 1.01238900e+01 -7.62340307e-01
4.60000000 8.31575808e+00 9.82596177e+00 -7.06998167e-01
4.80000000 8.41346190e+00 9.51170241e+00 -5.54217763e-01
5.00000000 8.58396126e+00 9.18811659e+00 -3.28769950e-01
5.20000000 8.80254983e+00 8.86152471e+00 -3.46068412e-02
5.40000000 8.98765465e+00 8.53656823e+00 2.85344951e-01
5.60000000 9.10422963e+00 8.21652554e+00 6.05017637e-01
5.80000000 9.11720943e+00 7.90386017e+00 8.90378316e-01
6.00000000 8.98477540e+00 7.60070411e+00 1.09258663e+00
6.20000000 8.72975305e+00 7.30895709e+00 1.20522461e+00
6.40000000 8.32810786e+00 7.02984524e+00 1.18194362e+00
6.60000000 7.80589224e+00 6.76384883e+00 1.01680074e+00
6.80000000 7.19656095e+00 6.51080814e+00 7.16212026e-01
7.00000000 6.56129231e+00 6.27012716e+00 3.25058166e-01
7.20000000 5.98858492e+00 6.04086809e+00 -6.23153506e-02
7.40000000 5.51241255e+00 5.82202378e+00 -3.93526929e-01
7.60000000 5.13102689e+00 5.61261867e+00 -6.52119403e-01
7.80000000 4.72972211e+00 5.41214227e+00 -7.85342354e-01
8.00000000 4.69231933e+00 5.22034743e+00 -8.09184601e-01
8.20000000 4.58563214e+00 5.03712532e+00 -7.34991453e-01
8.40000000 4.51370294e+00 4.86256785e+00 -6.02657957e-01
8.60000000 4.45848057e+00 4.69661384e+00 -4.36047374e-01
8.80000000 4.40800313e+00 4.53888375e+00 -2.53751712e-01
9.00000000 4.34257246e+00 4.38872269e+00 -9.46407577e-02
9.20000000 4.26160802e+00 4.24545828e+00 3.49968226e-02
9.40000000 4.15328387e+00 4.10866212e+00 1.02087854e-01
9.60000000 4.02438319e+00 3.97814792e+00 1.11574182e-01
9.80000000 3.88468226e+00 3.85386102e+00 7.83754638e-02
10.00000000 3.74205023e+00 3.73576711e+00 1.68188386e-02
10.20000000 3.61262776e+00 3.62390248e+00 -3.17343264e-02
10.40000000 3.49367243e+00 3.51862674e+00 -7.37574291e-02
10.60000000 3.41076639e+00 3.42024543e+00 -2.93773678e-02
10.80000000 3.34541909e+00 3.32863765e+00 5.44485570e-02
11.00000000 3.29695426e+00 3.24336880e+00 1.81736976e-01
11.20000000 3.24724865e+00 3.16381354e+00 2.95362929e-01
11.40000000 3.19220840e+00 3.08931710e+00 3.79682888e-01
11.60000000 3.12391224e+00 3.01928959e+00 4.01956370e-01
11.80000000 3.05035356e+00 2.95319367e+00 3.88219257e-01
12.00000000 2.96541094e+00 2.89044452e+00 3.11231398e-01
12.20000000 2.88143247e+00 2.83048332e+00 2.19601945e-01
12.40000000 2.79620905e+00 2.77289664e+00 1.04249813e-01
12.60000000 2.71415438e+00 2.71736692e+00 -1.48960388e-02
12.80000000 2.63994550e+00 2.66365553e+00 -1.13936801e-01
13.00000000 2.57248397e+00 2.61158843e+00 -1.94654708e-01
13.20000000 2.51099905e+00 2.56111223e+00 -2.58283863e-01
13.40000000 2.45647135e+00 2.51237386e+00 -2.98161666e-01
13.60000000 2.40898898e+00 2.46558200e+00 -3.12163657e-01
13.80000000 2.37240218e+00 2.42085490e+00 -2.76203078e-01
14.00000000 2.33916829e+00 2.37808596e+00 -2.29111744e-01
14.20000000 2.32552321e+00 2.33691231e+00 -6.92046583e-02
14.40000000 2.30123485e+00 2.29676485e+00 2.80254947e-02
14.60000000 2.27474729e+00 2.25729048e+00 1.12909442e-01
14.80000000 2.23825353e+00 2.21844170e+00 1.32171627e-01
15.00000000 2.20022921e+00 2.18040794e+00 1.36359389e-01
15.20000000 2.15314601e+00 2.14341623e+00 6.89986013e-02
15.40000000 2.10642784e+00 2.10766586e+00 -9.04577014e-03
15.60000000 2.05978323e+00 2.07316509e+00 -1.00694865e-01
15.80000000 2.02022090e+00 2.03973135e+00 -1.51130236e-01
16.00000000 1.97851517e+00 2.00710786e+00 -2.27931444e-01

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