

Supplementary Material: Intelligent Poly(*N*-Isopropylmethacrylamide) Hydrogels: Synthesis, Structure Characterization, Swelling Properties, and Their Radiation Decomposition

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Table S1. Peak surface values for series of standard NiPMAM solutions with HPLC chromatogram at R_t=2.506 min.

c_{NiPMAM} , mg/cm ³	1.028	0.771	0.514	0.257	0.1028	0.0514	0.0257	0.01028	0.00514
A_{212nm} , mAU·s	14198.5	13285.1	12023.7	9720.6	5877.4	5877.4	1656.4	698.8	396.3

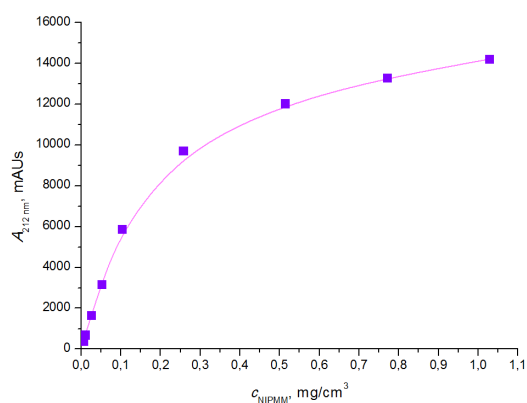


Figure S1. Calibration curve: dependence of peak area from HPLC chromatogram versus *N*-isopropylmethacrylamide (NiPMAM) concentration; R_t = 2.506 min.

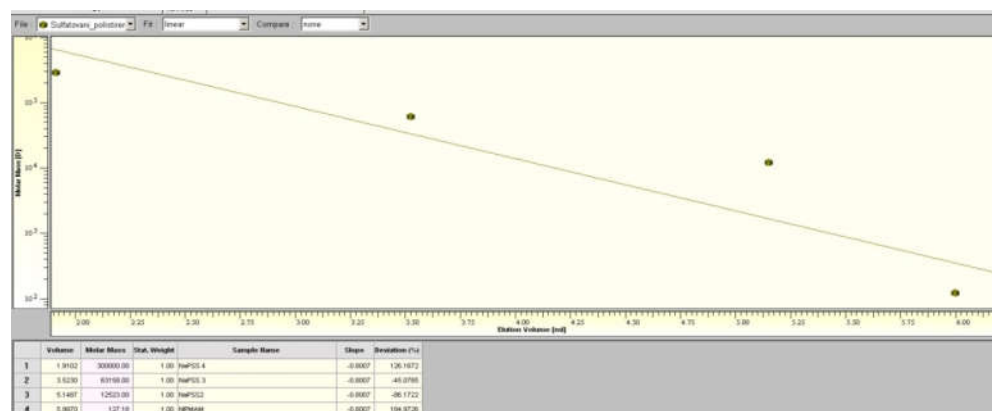


Figure S2. Calibration curve for GPC obtained by standards solutions of NiPMAM and sulfonated poly(styrene) with narrow molecular weight distributions

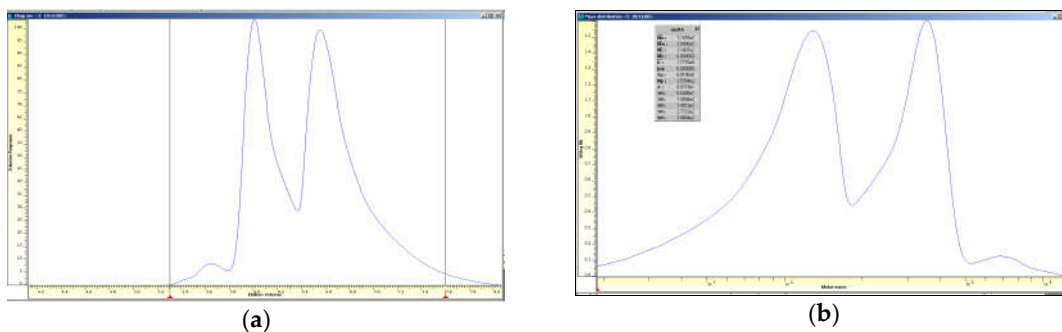


Figure S3. (a) Elugram and (b) differential molar mass distribution of liquid material after poly(*N*-isopropylmethacrylamide) (p(NiPMAM)) gamma irradiation, for fractions 5.30-7.60 min.

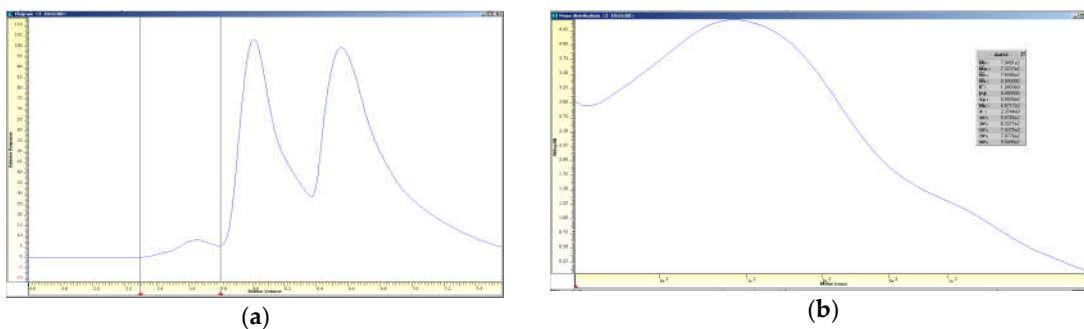


Figure S4. (a) Elugram and (b) differential molar mass distribution of liquid material after p(NiPMAM) gamma irradiation, for fractions 5.30-5.80 min.

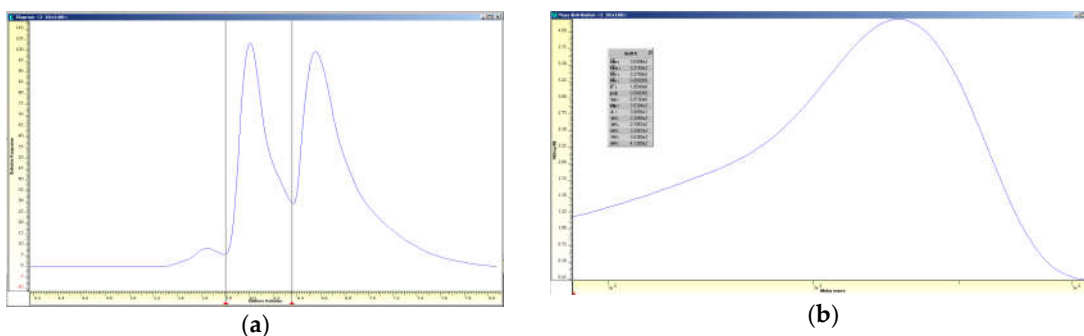


Figure S5. (a) Elugram and (b) differential molar mass distribution of liquid material after p(NiPMAM) gamma irradiation, for fractions 5.80-6.36 min.

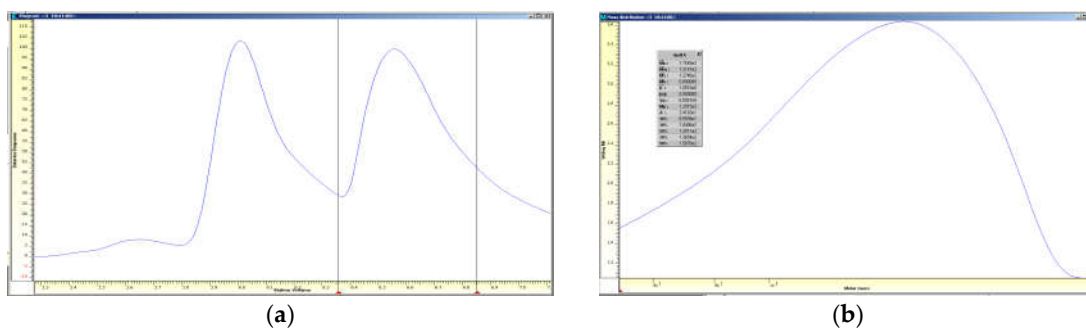
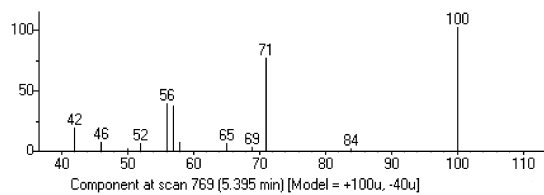
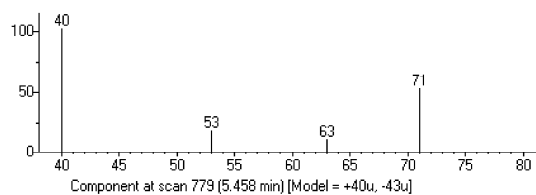


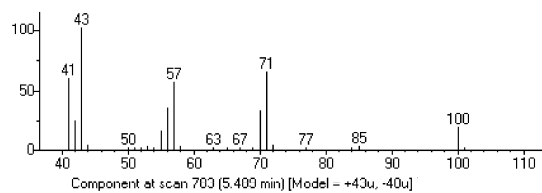
Figure S6. (a) Elugram and (b) differential molar mass distribution of liquid material after p(NiPMAM) gamma irradiation, for fractions 6.36-6.85 min.



(a)



(b)



(c)

Figure S7. The deconvoluted mass spectra of the co-eluting components under the peak 1 at 60 °C oven temperature designated by the order of their elution from the HP-5ms column (t_{ret}): (a) 5.395 min, (b) 5.458 min, (c) 5.489 min. The proposed structures are that of heptane (c), heptane isomer (a) and related compound (b).

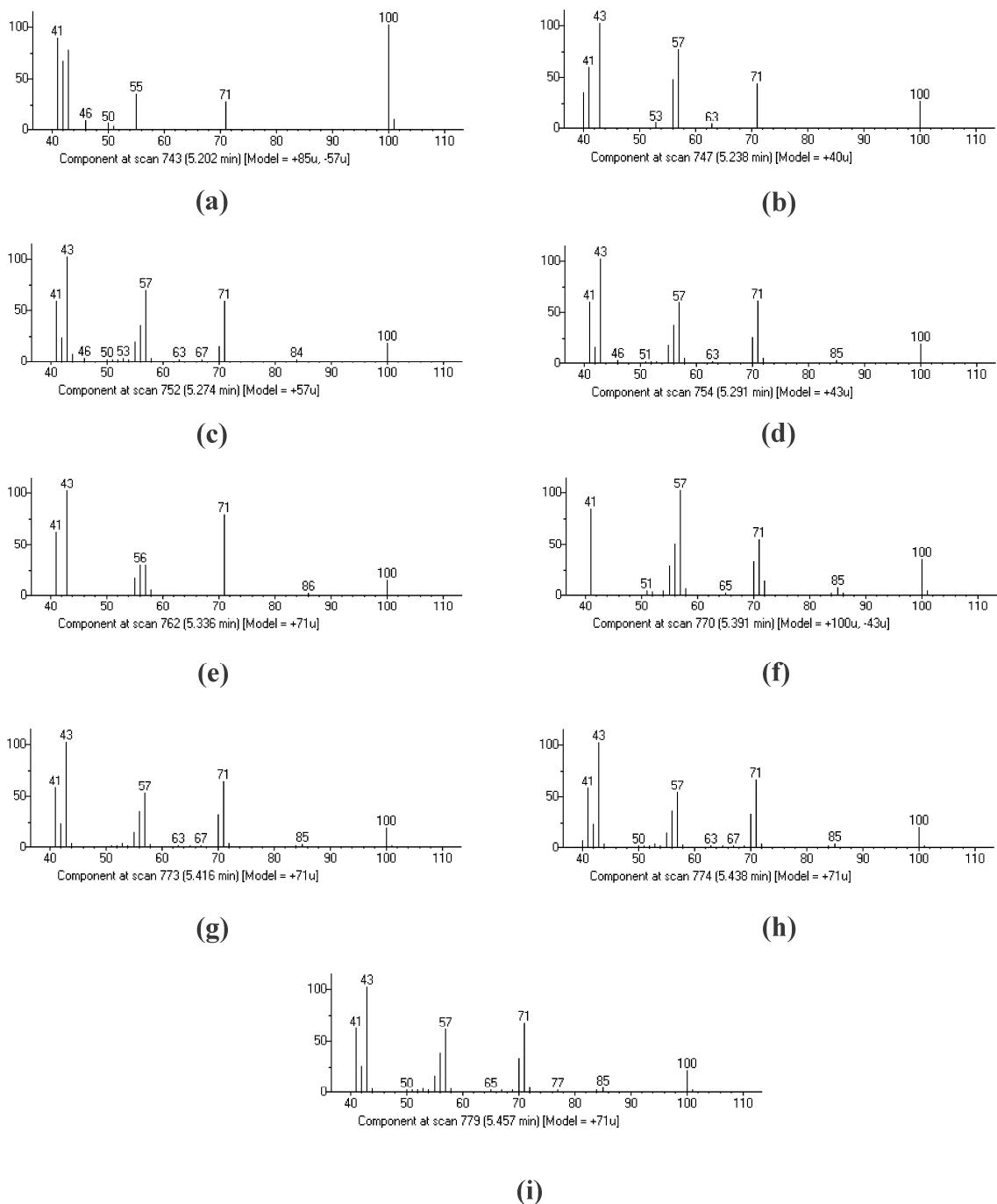


Figure S8. The deconvoluted mass spectra of the co-eluting components under the peak 1 at 90 °C oven temperature designated by the order of their elution from the HP-5ms column (t_{ret}): **(a)** 5.202 min, **(b)** 5.238 min, **(c)** 5.274 min, **(d)** 5.291, **(e)** 5.336 min, **(f)** 5.391 min, **(g)** 5.438 min, **(h)** 5.457 min, **(i)** 5.457 min. The proposed structures are that of heptane **(i)**, heptane isomers **(b-d, f-h)** and related compounds **(a, e)**.

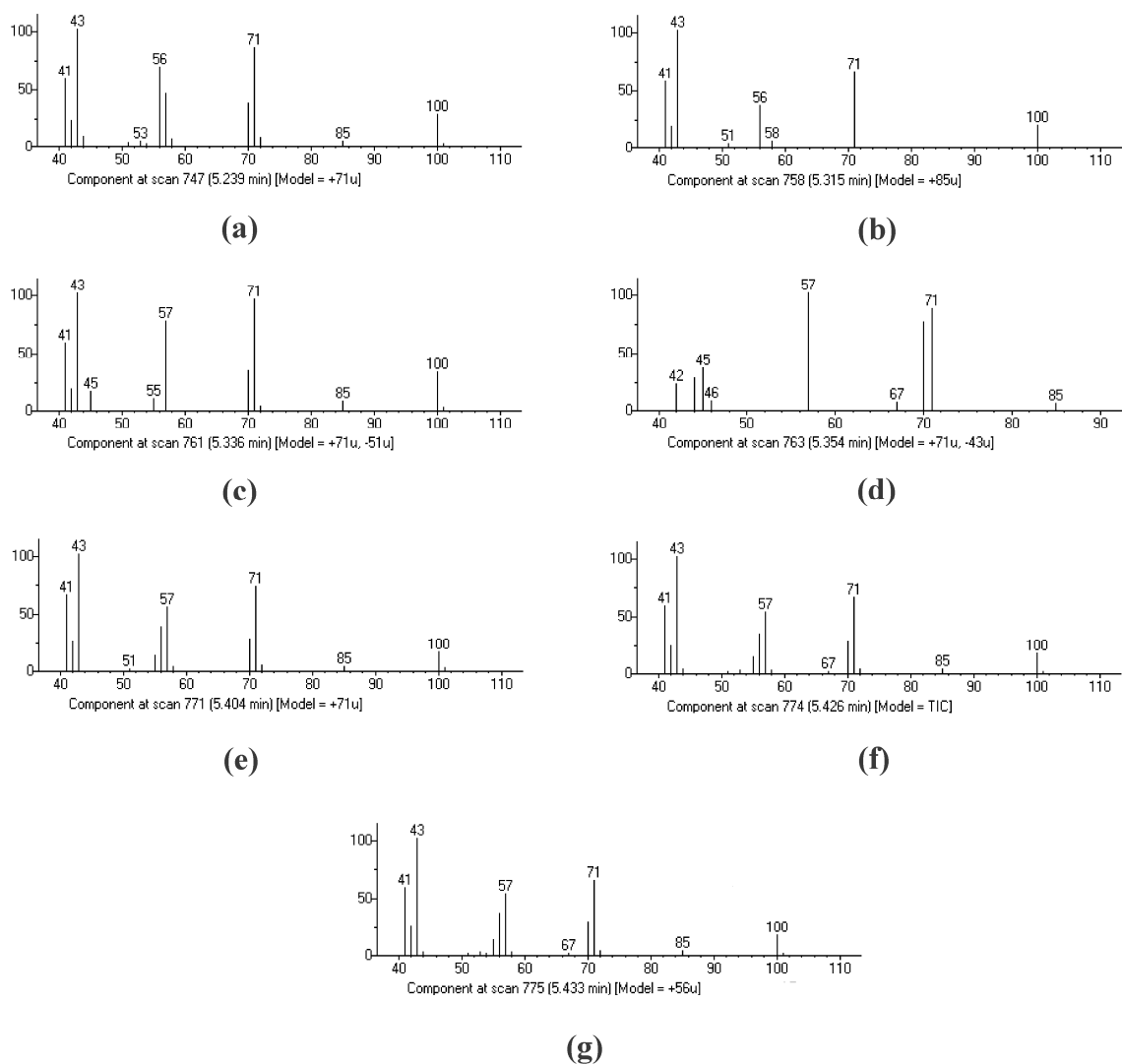


Figure S9. The deconvoluted mass spectra of the co-eluting components under the peak 1 at 120 °C oven temperature designated by the order of their elution from the HP-5ms column (t_{ret}): (a) 5.239 min, (b) 5.315 min, (c) 5.336 min, (d) 5.354 min, (e) 5.404 min, (f) 5.426 min, (g) 5.433 min. The proposed structures are that of heptane (g), heptane isomers (c, e, f) and related compounds (a, b, d).

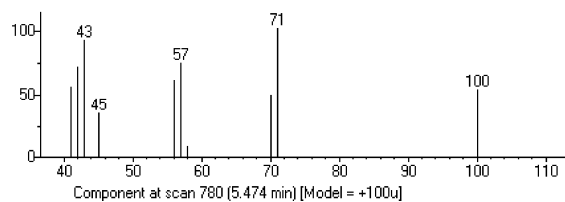
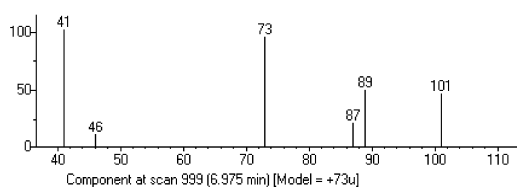
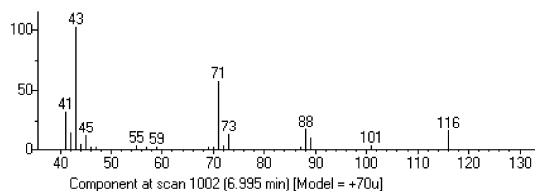


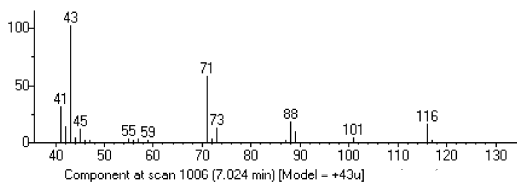
Figure S10. The deconvoluted mass spectrum of the component under the peak 1 at 150 °C oven temperature, eluted at $t_{ret} = 5.474$ min. The proposed structure is that of a heptane.



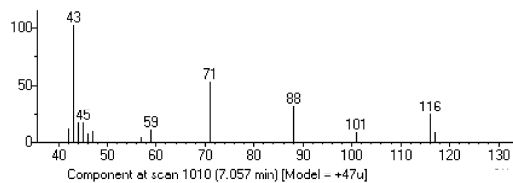
(a)



(b)

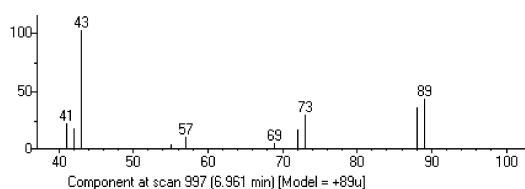


(c)

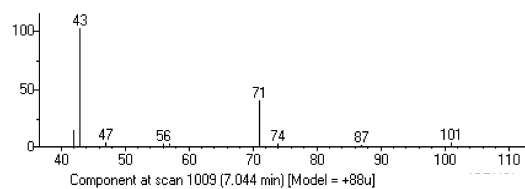


(d)

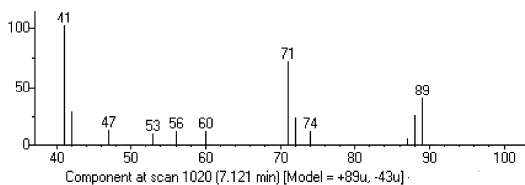
Figure S11. The deconvoluted mass spectra of the co-eluting components under the peak 2 at 60 °C oven temperature designated by the order of their elution from the HP-5ms column (t_{ret}): **(a)** 6.975 min, **(b)** 6.995 min, **(c)** 7.024 min, **(d)** 7.057min. The proposed structures are that of ethyl isobutyrate **(d)**, its isomers **(b, c)** and related compound **(a)**.



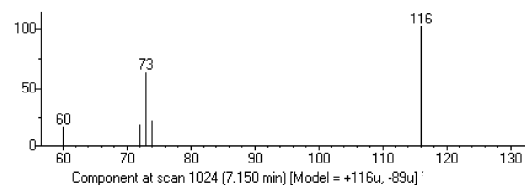
(a)



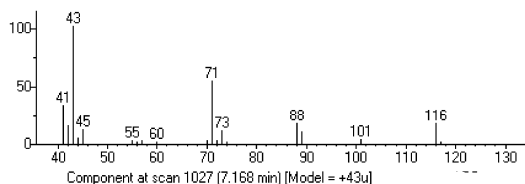
(b)



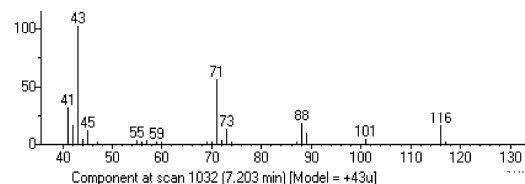
(c)



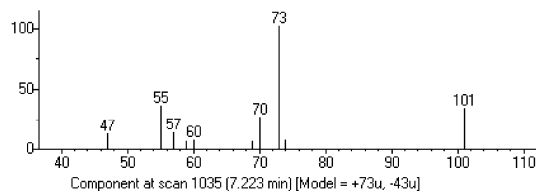
(d)



(e)



(f)



(g)

Figure S12. The deconvoluted mass spectra of the co-eluting components under the peak 2 at 90 °C oven temperature designated by the order of their elution from the HP-5ms column (t_{ret}): **(a)** 6.961 min, **(b)** 7.044 min, **(c)** 7.121 min, **(d)** 7.150min, **(e)** 7.168 min, **(f)** 7.203 min, **(g)** 7.223 min. The proposed structures are that of ethyl isobutyrate **(f)**, its isomer **(e)** and related compounds **(a-d, g)**.

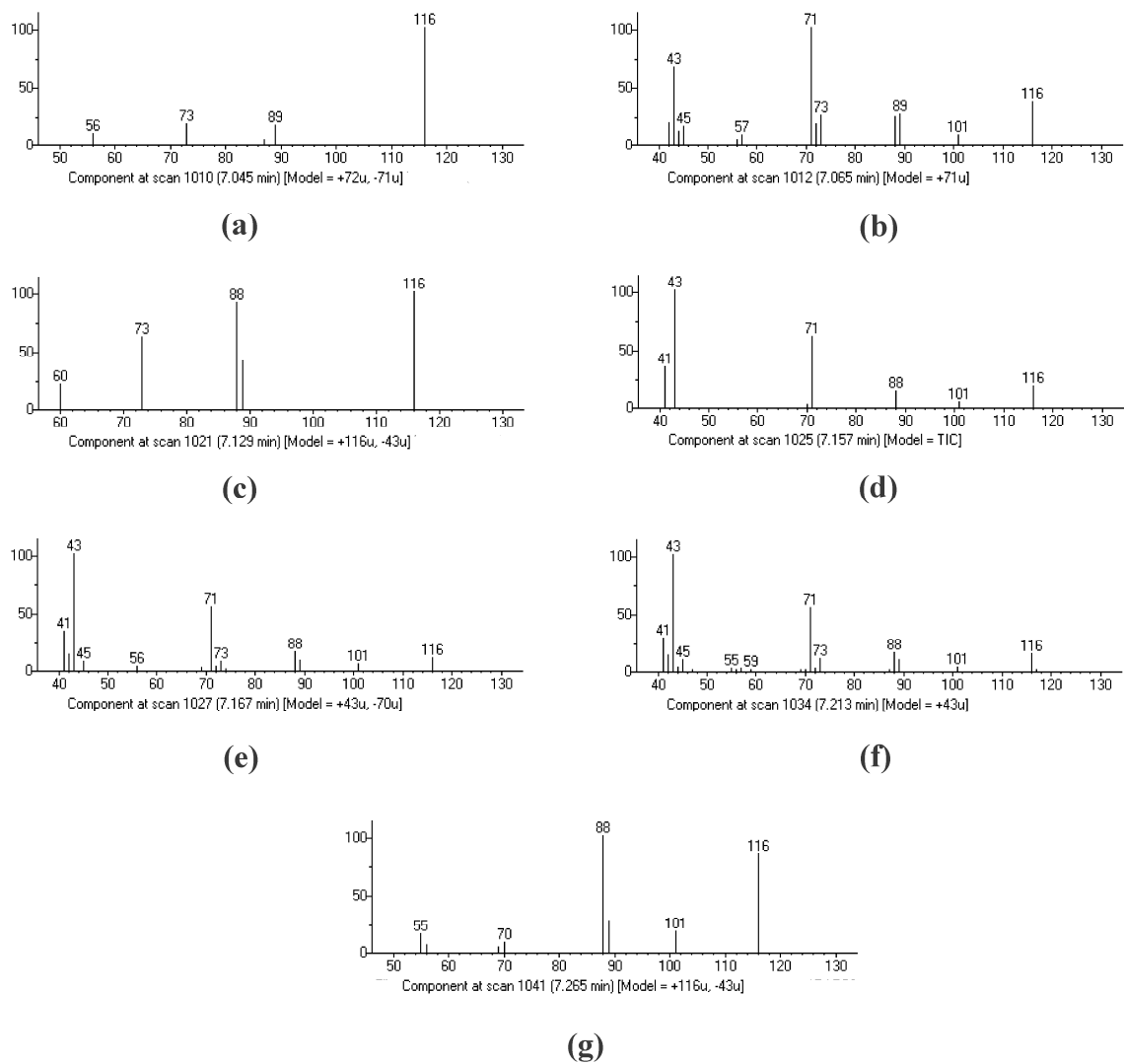


Figure S13. The deconvoluted mass spectra of the co-eluting components under the peak 2 at 120 °C oven temperature designated by the order of their elution from the HP-5ms column (t_{ret}): **(a)** 7.045 min, **(b)** 7.065 min, **(c)** 7.129 min, **(d)** 7.157min, **(e)** 7.167 min, **(f)** 7.213 min, **(g)** 7.265 min. The proposed structures are that of ethyl isobutyrate **(f)**, its isomers **(d, e)** and related compounds **(a-c, g)**.

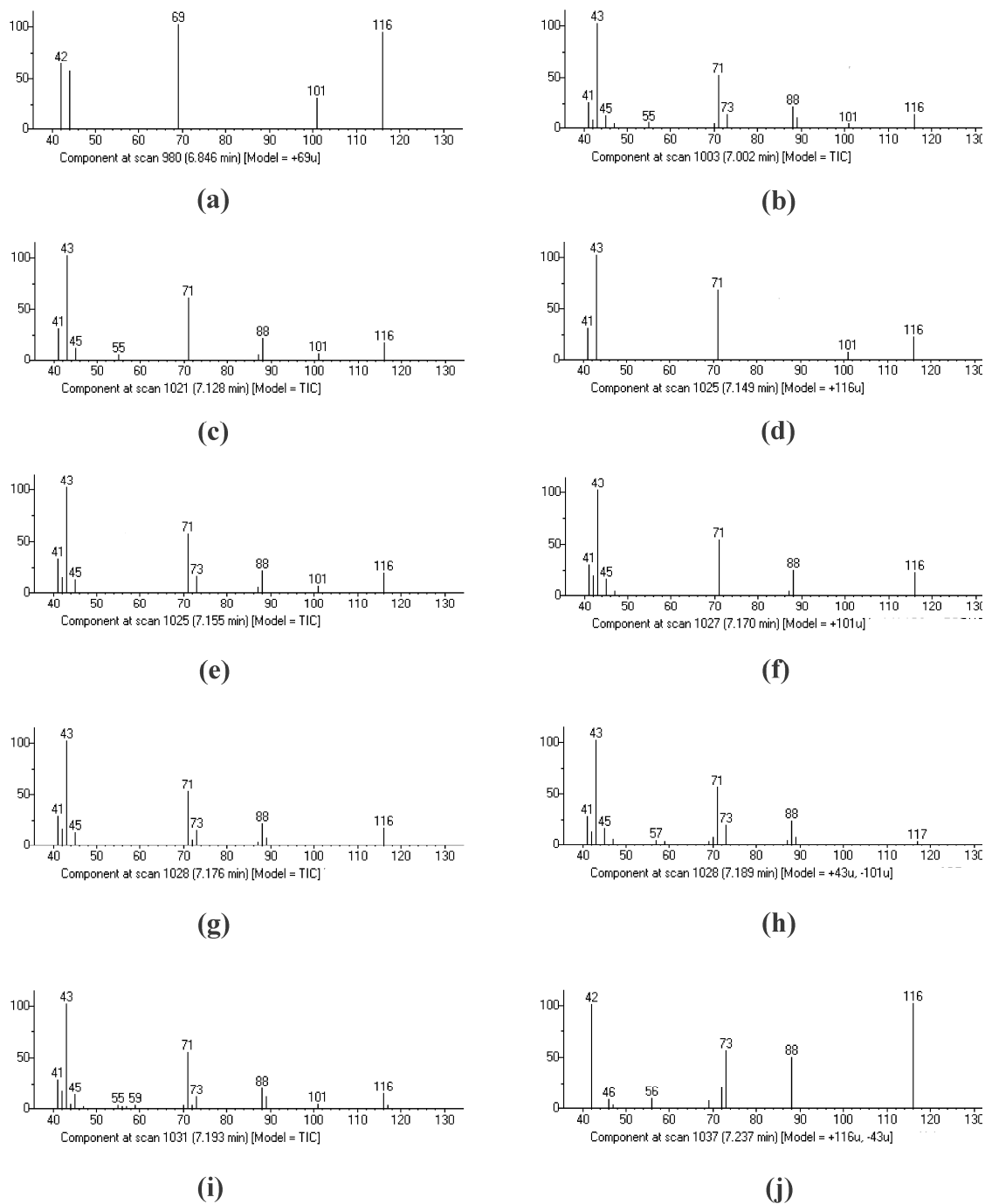


Figure S14. The deconvoluted mass spectra of the co-eluting components under the peak 2 at 150 °C oven temperature designated by the order of their elution from the HP-5ms column (t_{ret}): **(a)** 6.846 min, **(b)** 7.002 min, **(c)** 7.128 min, **(d)** 7.149min, **(e)** 7.155 min, **(f)** 7.170 min, **(g)** 7.176 min, **(h)** 7.189 min, **(i)** 7.193 min, **(j)** 7.237 min. The proposed structures are that of ethyl isobutyrate **(i)**, its isomers **(b, c, e)** and related compounds **(a, d, f, g, j)**.