Supplementary material for manuscript:

First evidence of the double bond formation by deoxydehydration of glycerol and 1,2-propanediol in ionic liquids

by

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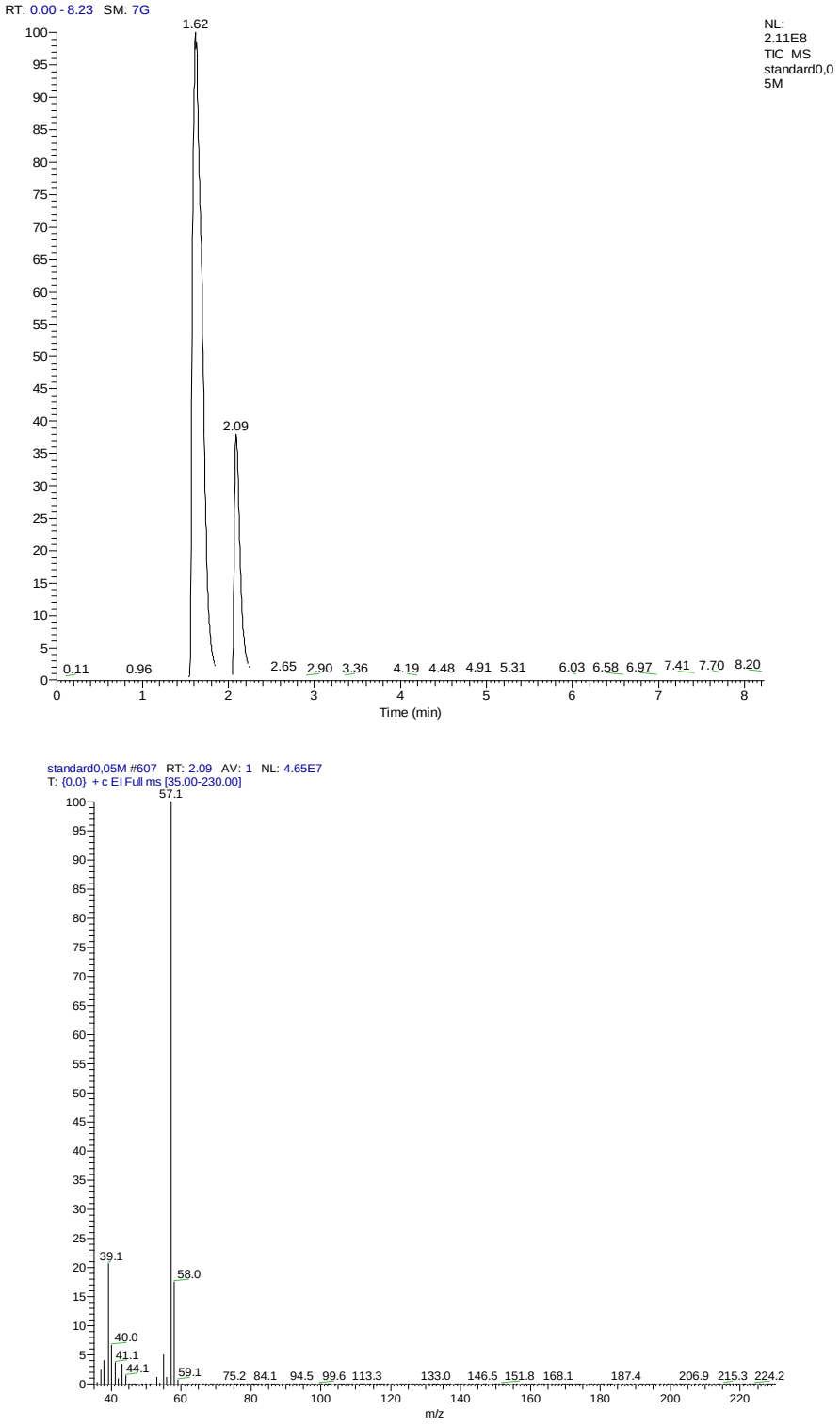

Figure S1
GG-MS chromatogram (top) and mass spectrum (bottom) of allyl alcohol; the chromatogram was recorded with the headspace technique in split mode (1:20) with the GC-MS apparatus set without any acquisition delay time. The sampling was made by a gas tight syringe (50 μL) from a 10 mL rubber cap sealed vial containing 5 mL of the water trap, thermostated at 60 °C for 15 min. Allyl alcohol is the peak at RT 2.09 while the peak appearing at RT 1.62 is attributable to the other gas present inside the syringe (mainly CO_2, since the acquisition starts from 33 uma)

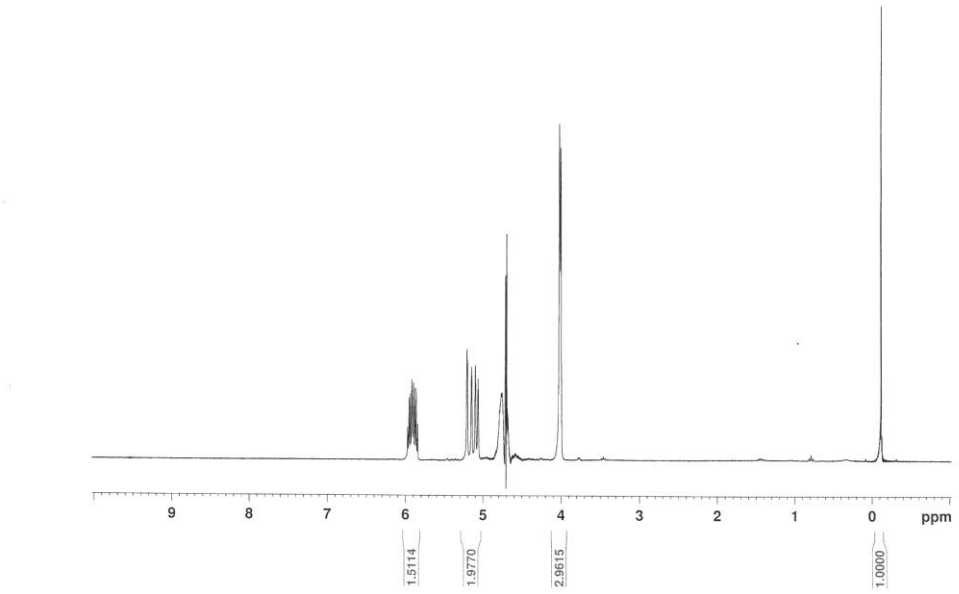

Figure S2
NMR spectrum of allyl alcohol in H_2O which was recorded placing, inside the NMR tube, a sealed capillary containing a 30 mM D_2O solution of TSP (signal at around 0 ppm). Areas are normalised giving the unit value to the TSP signal

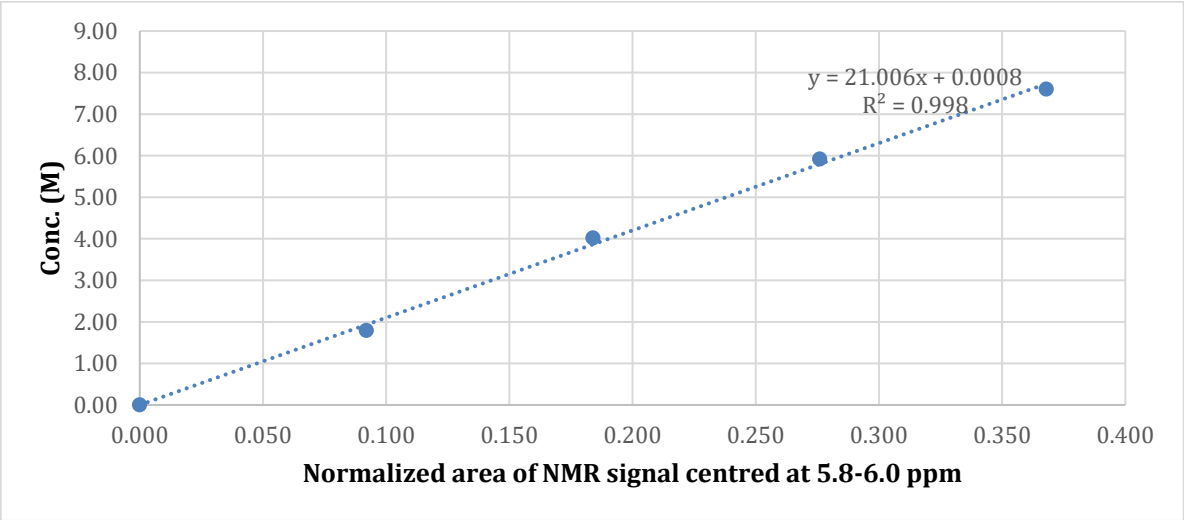

Figure S3
Example of calibration straight, built daily, for quantitative evaluation of allyl alcohol relative to the DODH reaction conducted on Gly.

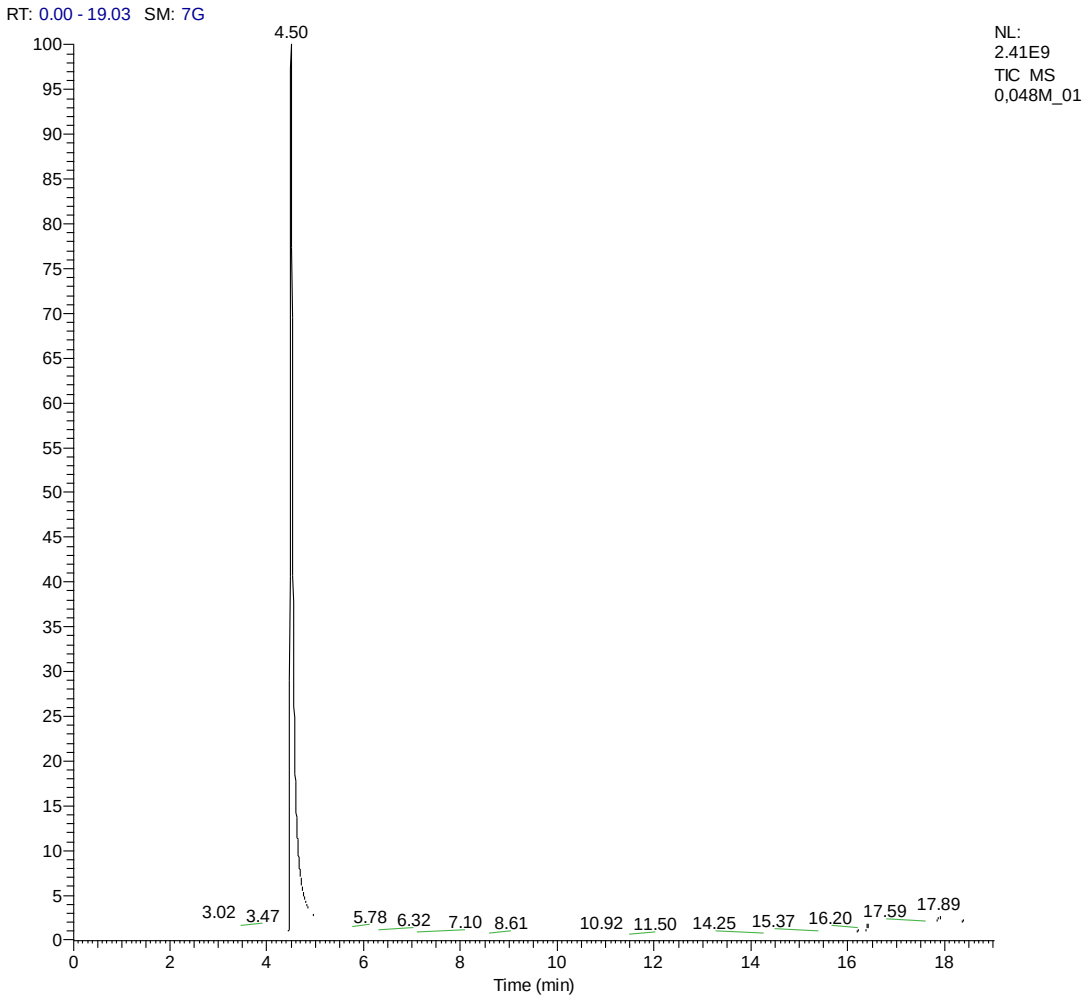

Figure S4
GC MS chromatogram of 1,2-dibromopropane coming from the DODH reaction on 1,2-propanediol

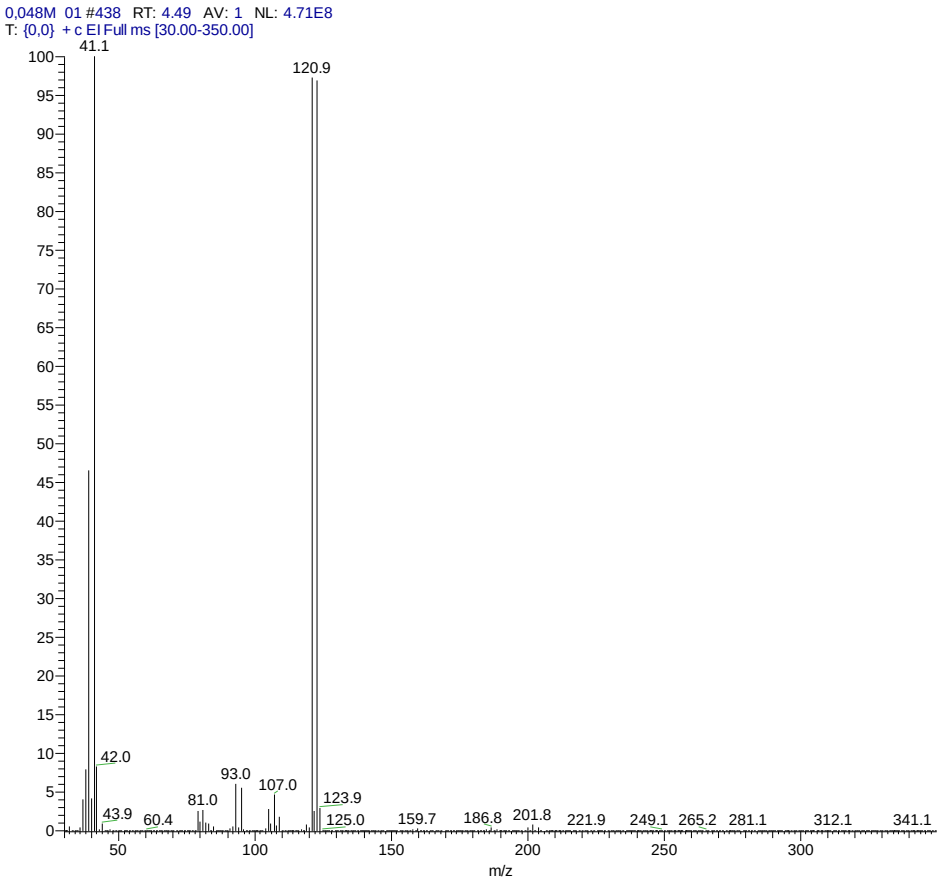

Figure S5
Mass spectrum of dibromopropane

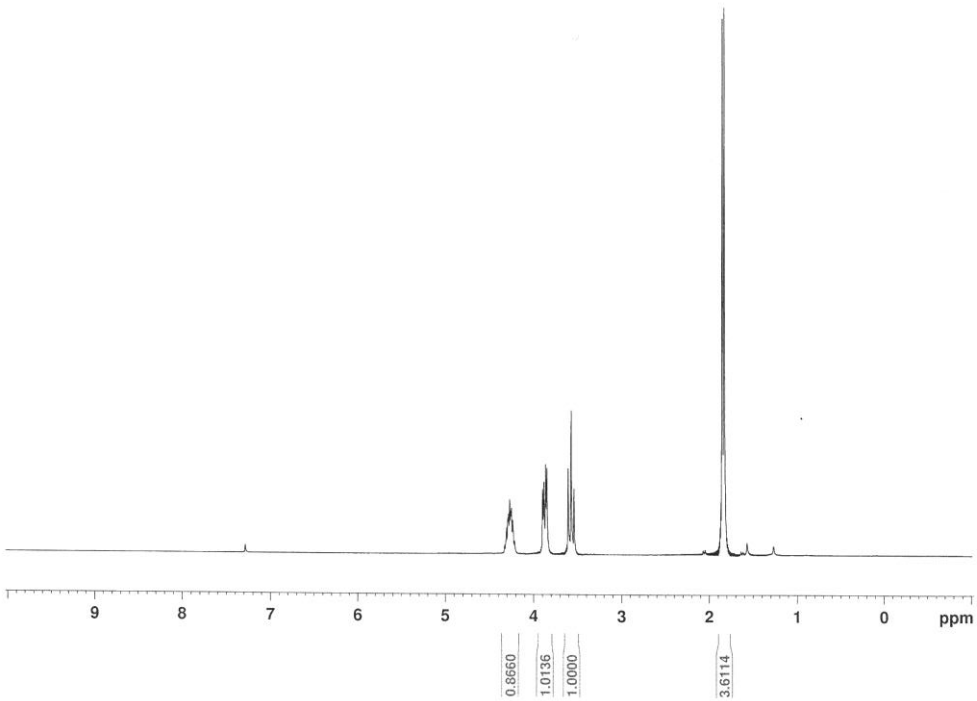

Figure S6
^{1}H NMR spectrum of 1,2-dibromopropane (in $CDCl_3$)

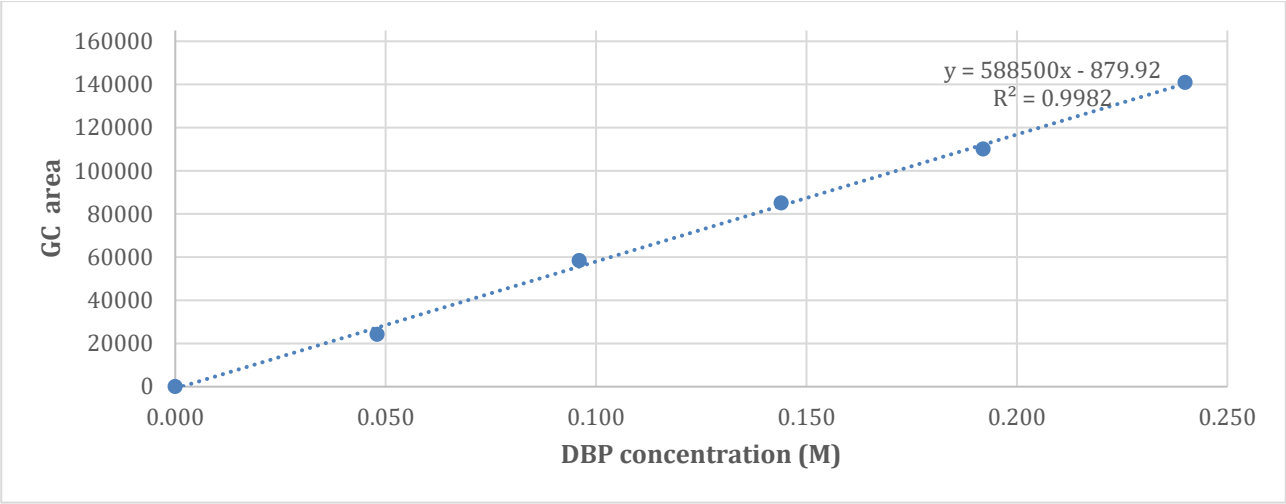

Figure S7
GC calibration straight of dibromopropane in $CHCl_3$

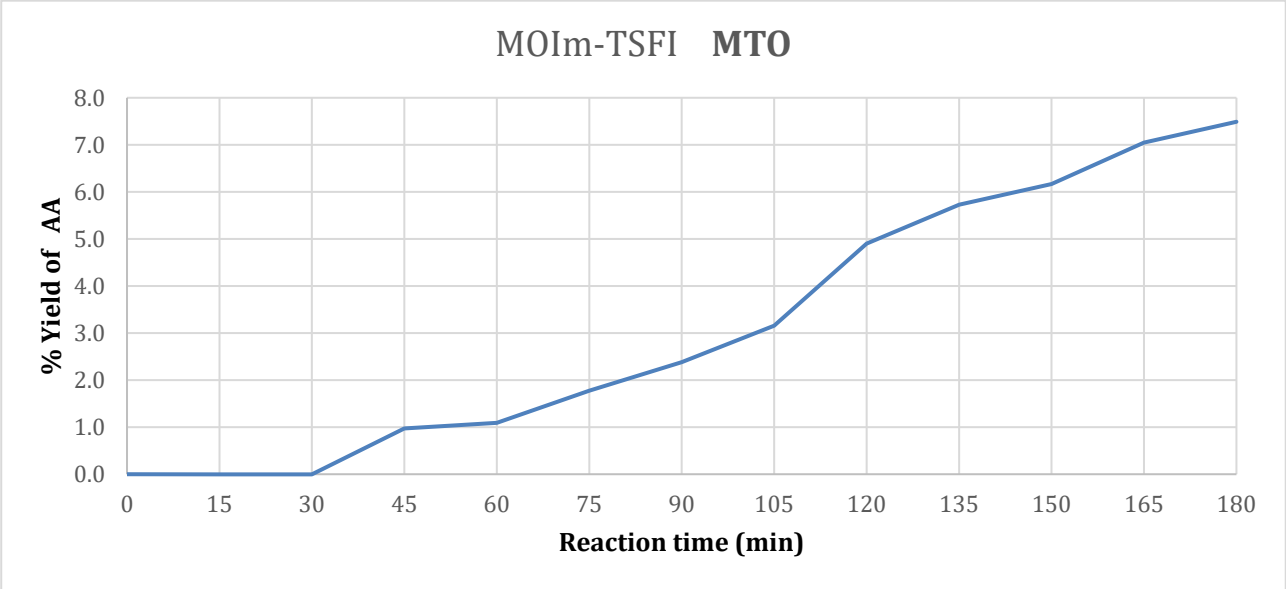

Figure S8
Time course of DODH reaction of Gly in MOIm-TFSI, catalysed by MTO at very early time (180 min).

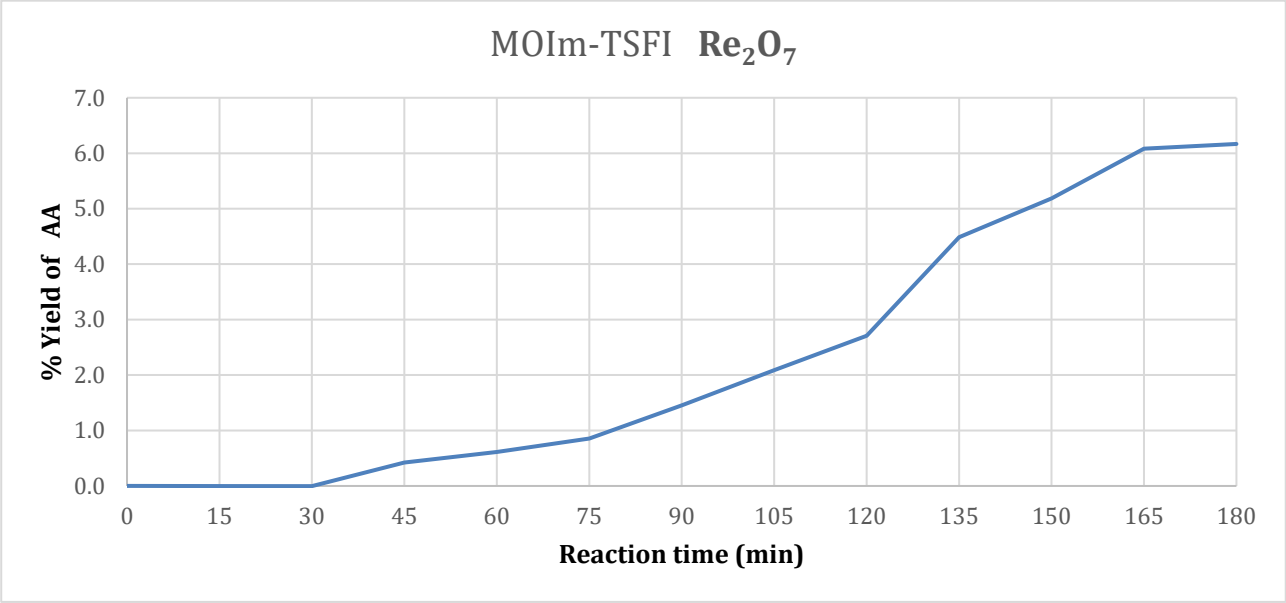

Figure S9
Time course of DODH reaction of Gly in MOIm-TFSI, catalysed by Re_2O_7 at very early time (180 min).

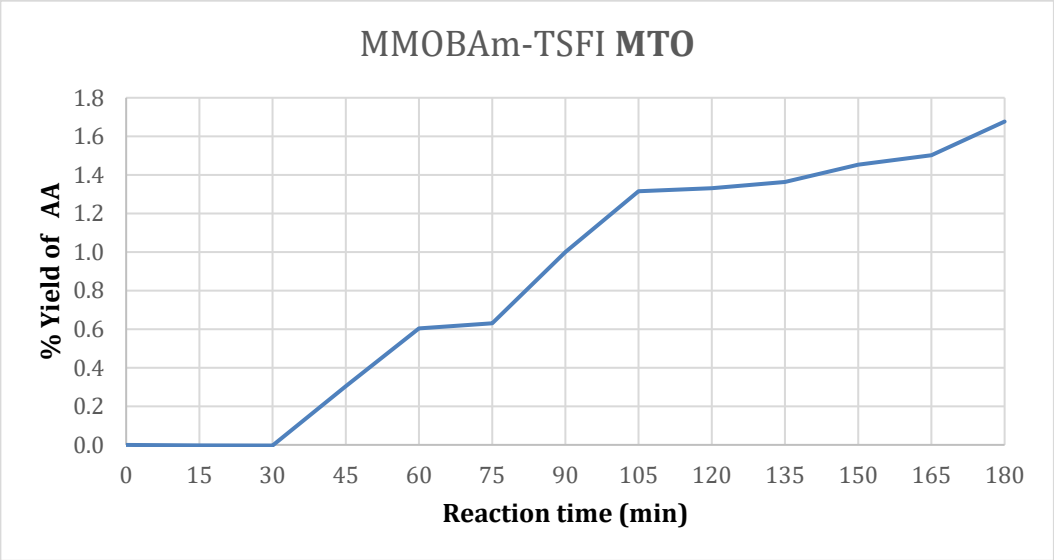

Figure S10
Time course of DODH reaction of Gly in MMOBAm-TFSI, catalysed by MTO at very early time (180 min).

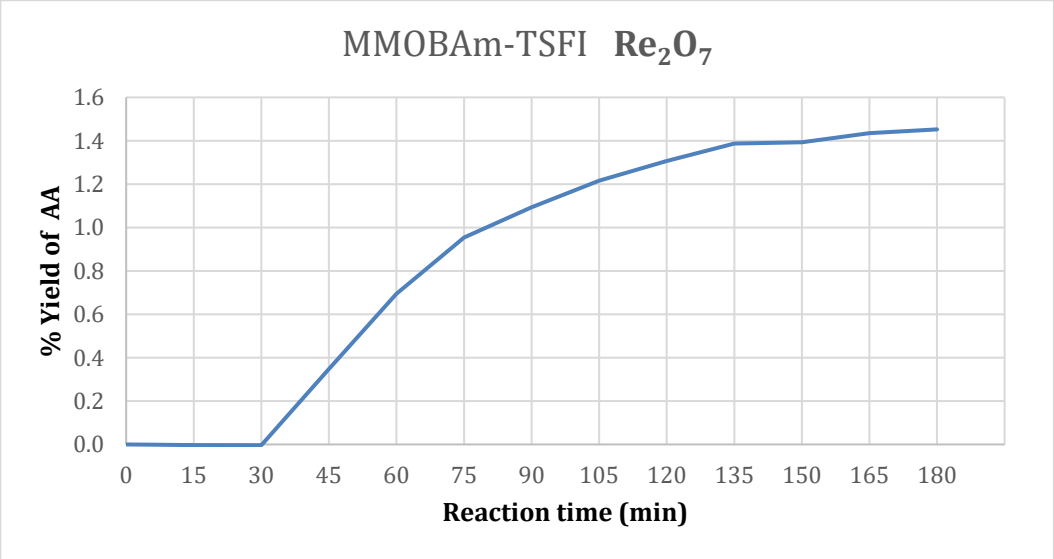

Figure S11
Time course of DODH reaction of Gly in MMOBAm-TFSI, catalysed by Re_2O_7 at very early time (180 min).

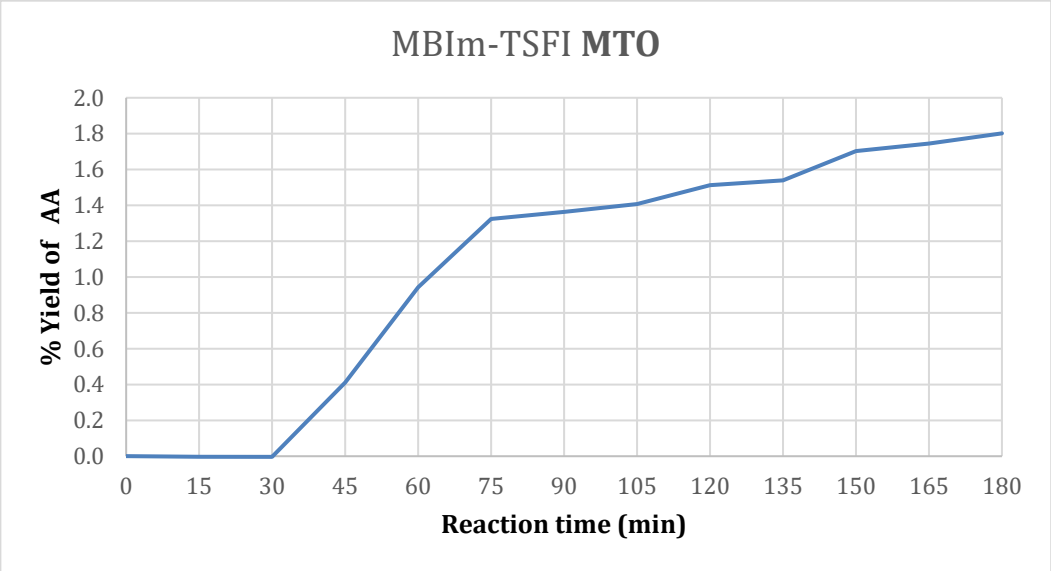

Figure S12
Time course of DODH reaction of Gly in MBIm-TFSI, catalysed by MTO at very early time (180 min).

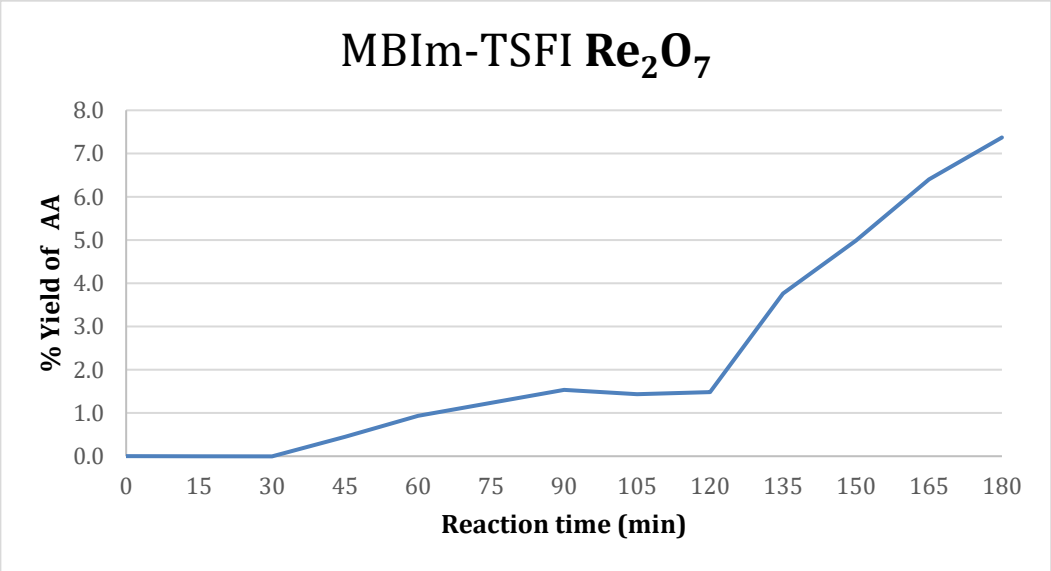

Figure S13
Time course of DODH reaction of Gly in MBIm-TFSI, catalysed by Re_2O_7 at very early time (180 min).

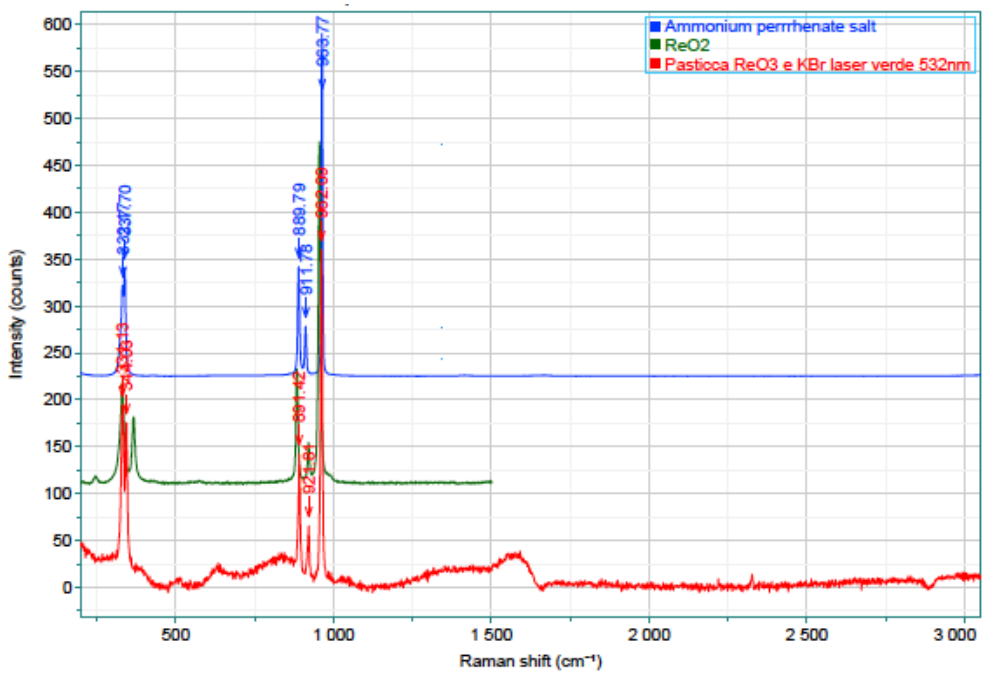

Figure S14
Raman spectra of NH_4ReO_4 (blue line), ReO_2 (green line) and ReO_3 (red line). While NH_4ReO_4 and ReO_2 spectra were recorded simply using directly the purchased material without other procedure, for ReO_3, at 532 nm (used laser wavelength), it was necessary to make KBr tablet containing the oxide dispersed inside: the strong absorption at such wavelength, induces a strong heating that does not allow to record a satisfying spectrum. Also spectra recorded with the other laser wavelength present in our Raman instrument (638 nm), does not allow to record easily interpretable Raman spectra

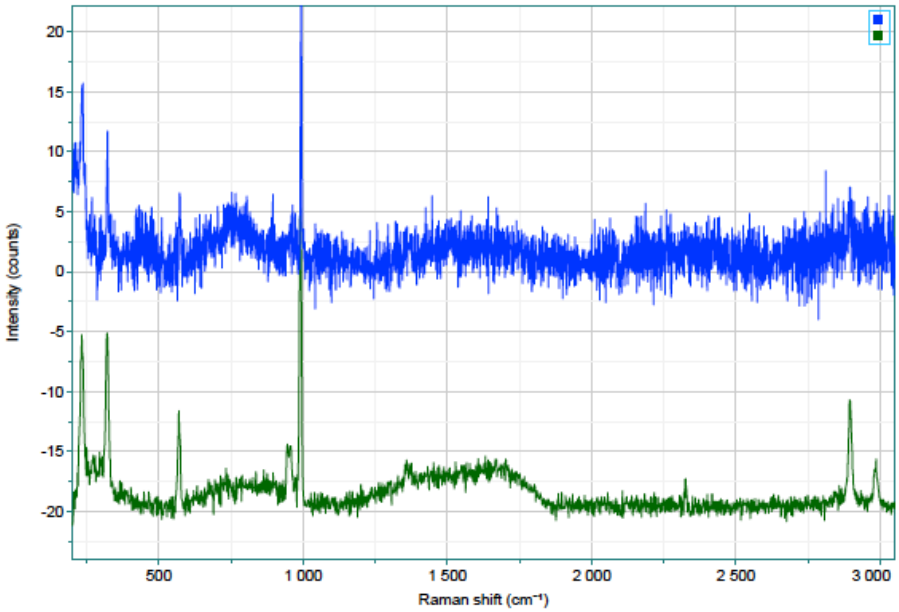

Figure S15
Raman spectra of an MTO tablet, recorded by use the two different laser wavelengths available on the Raman instrument at our disposal: the green layout is relative to the 532 nm laser beam while the blue layout is relative to the 638 nm laser beam