Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Olefin Metathesis in Air Using Latent Ruthenium Catalysts: Imidazole Substituted Amphiphilic Hydrogenated ROMP Polymers Providing Nano-Sized Reaction Spaces in Water

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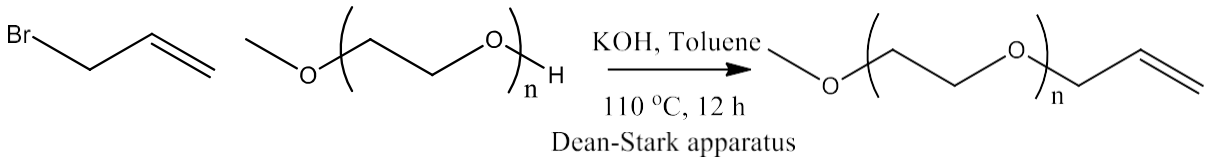
FIGURES

SUPPORTING INFORMATION (SI)

Synthesis of Allyl PEG methyl ether



Polyethyleneglycol methyl ether (5000 Da, 10 g) and KOH (0.11 g, 0.0020 mol) in 20 ml toluene was taken to a three necked flask equipped with condenser and Dean-Stark apparatus and stirred for 4 h at 110 °C. The reaction temperature was decreased to 50 °C and allyl bromide (0.0025 mol, 3.02 g) was added dropwise and stirred for 12 h. Reaction mixture was filtrated to remove KBR and all volatiles were removed by rotary evaporator. White-yellowish solid was purified using CH_2Cl_2 and diethyl ether. Allyl PEG methyl ether was isolated as white powder. (Figure S1)

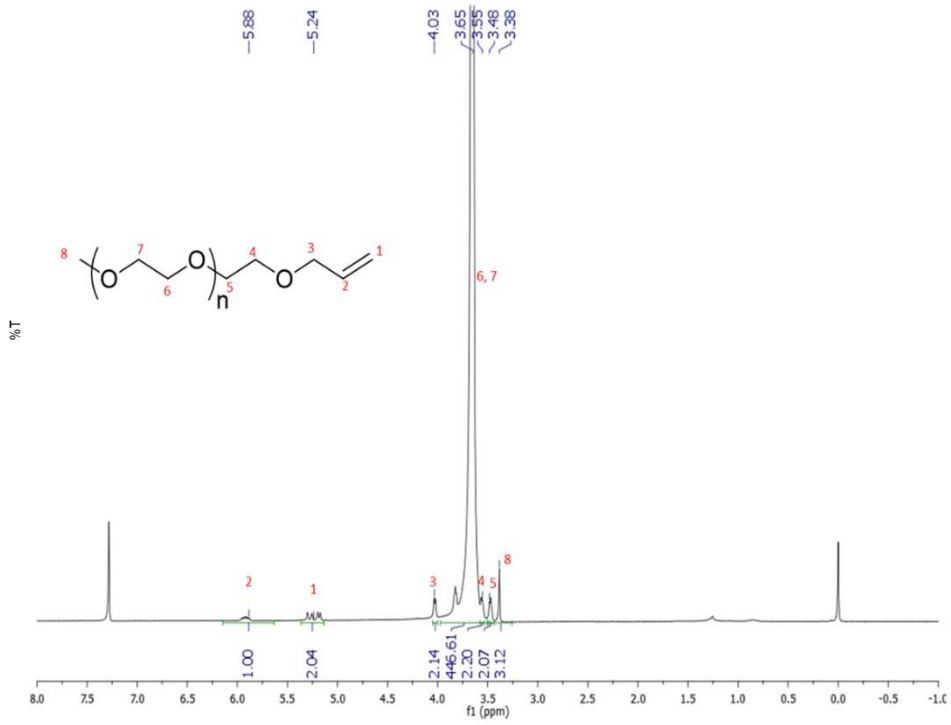


Figure S1. ^{1}HNMR spectrum of allyl-PEG-methyl ether (5000 Da) in $CDCl_3$

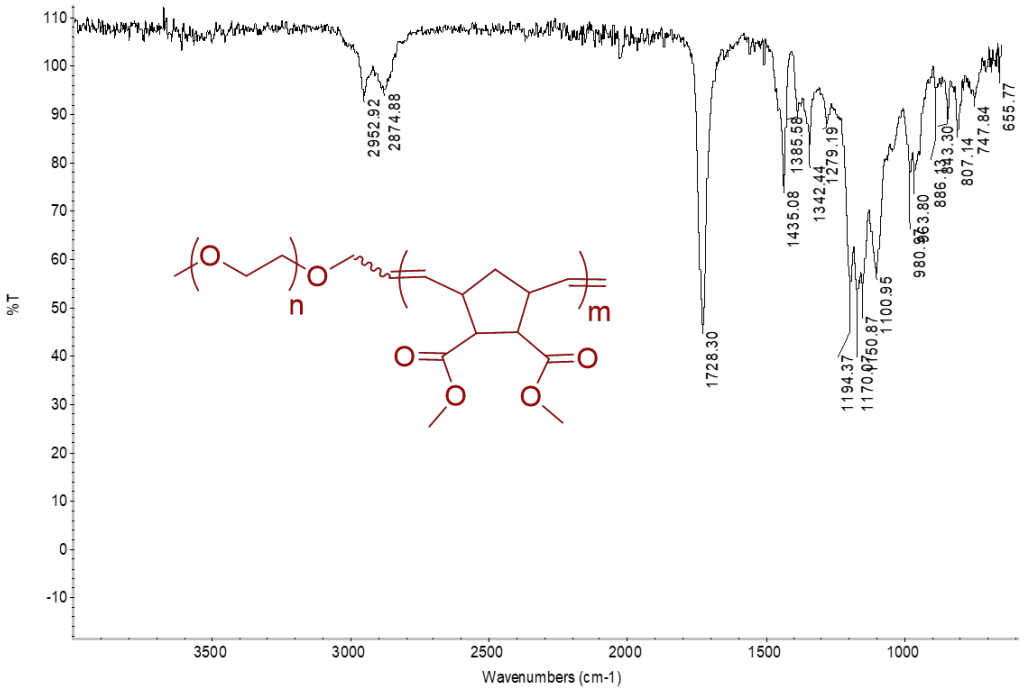


Figure S2. FT-IR spectrum of Amph1

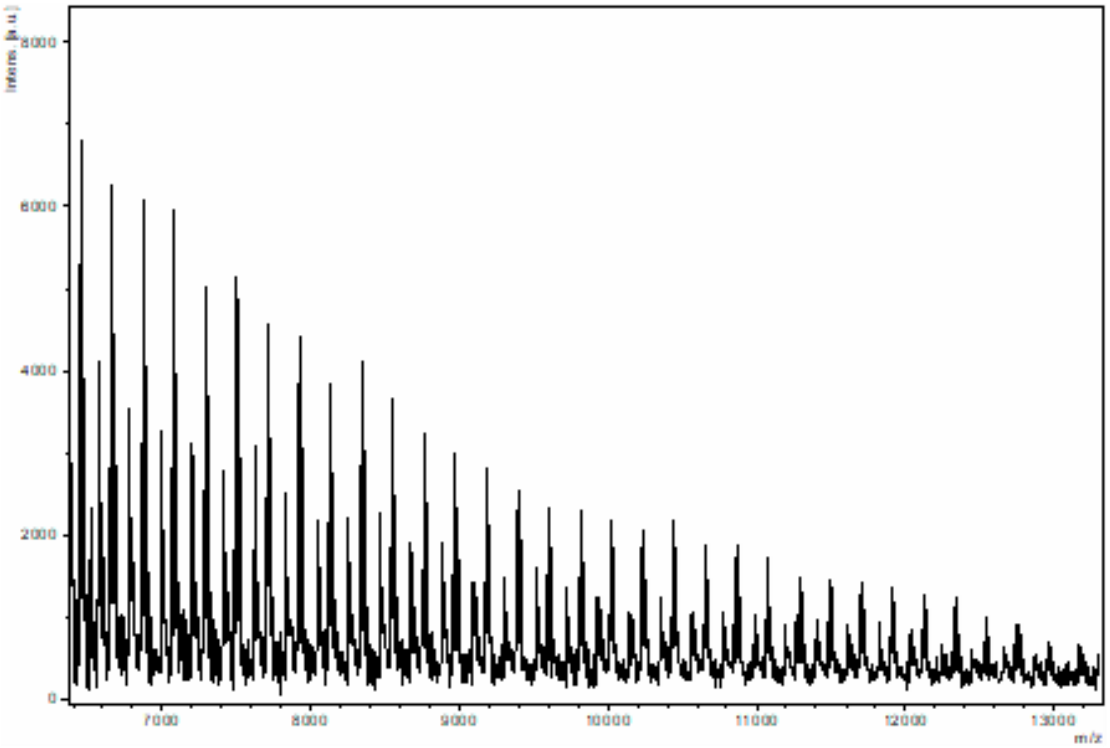


Figure S3. MALDI ToF MS spectrum of Amph1 (Spectrum was cut before 5000 Da region to reduce the suppressing effect of PEG groups)

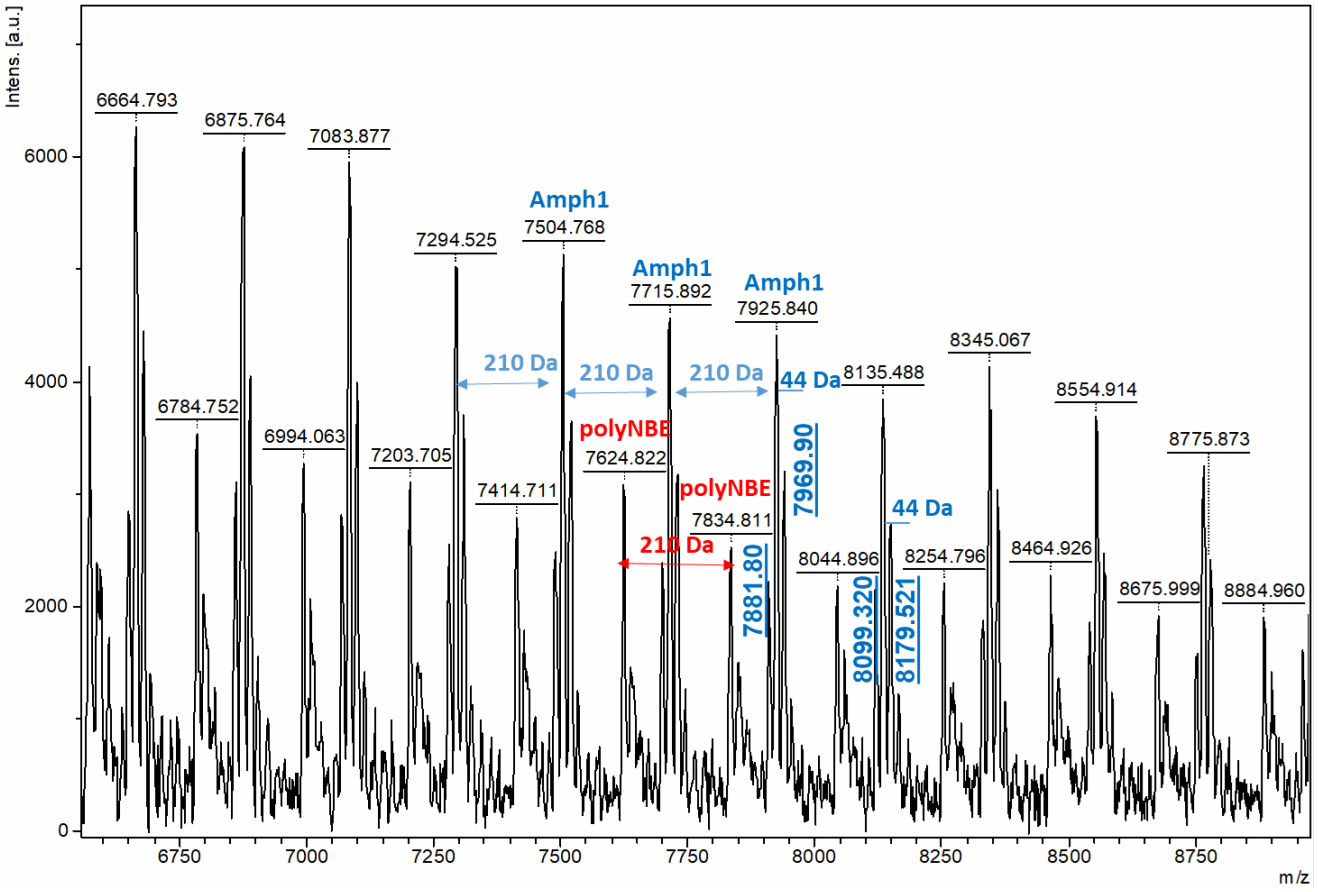


Figure S4. MALDI ToF MS spectrum of Amp1 in details

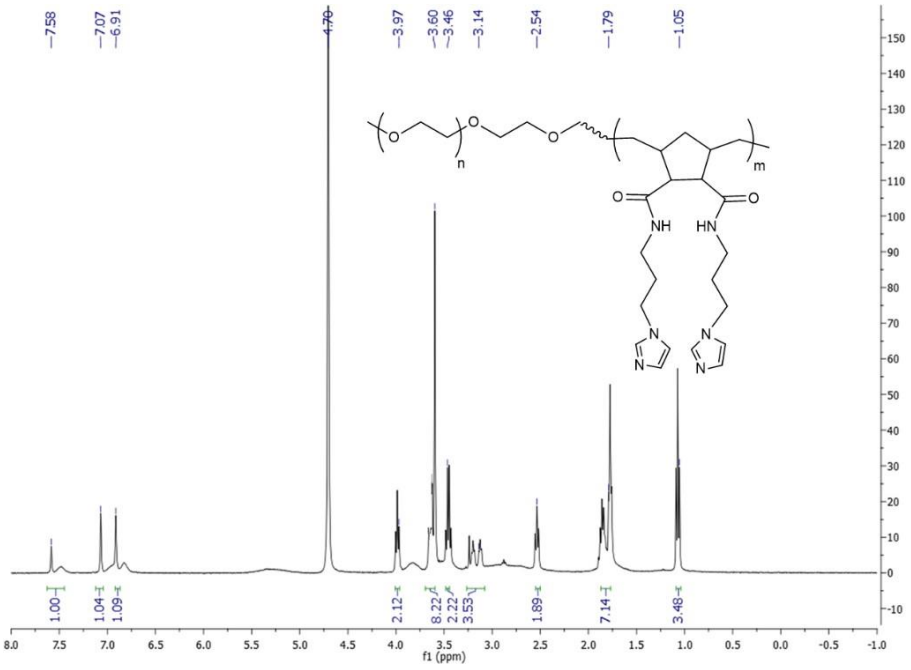


Figure S5. ^{1}H NMR spectrum of mod-Amph1 in D_2O

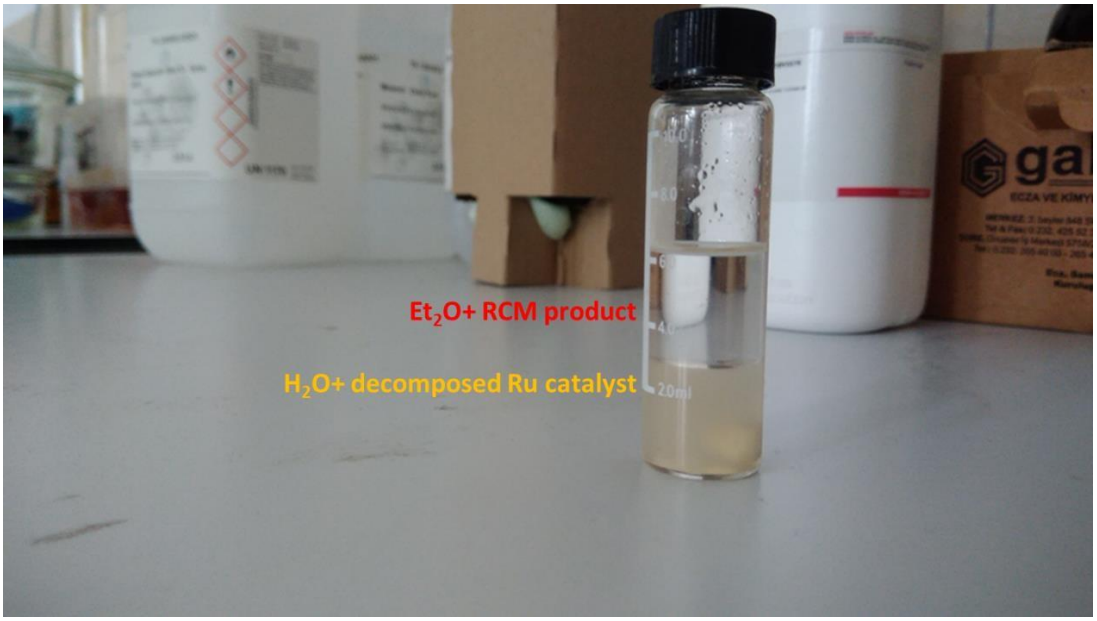
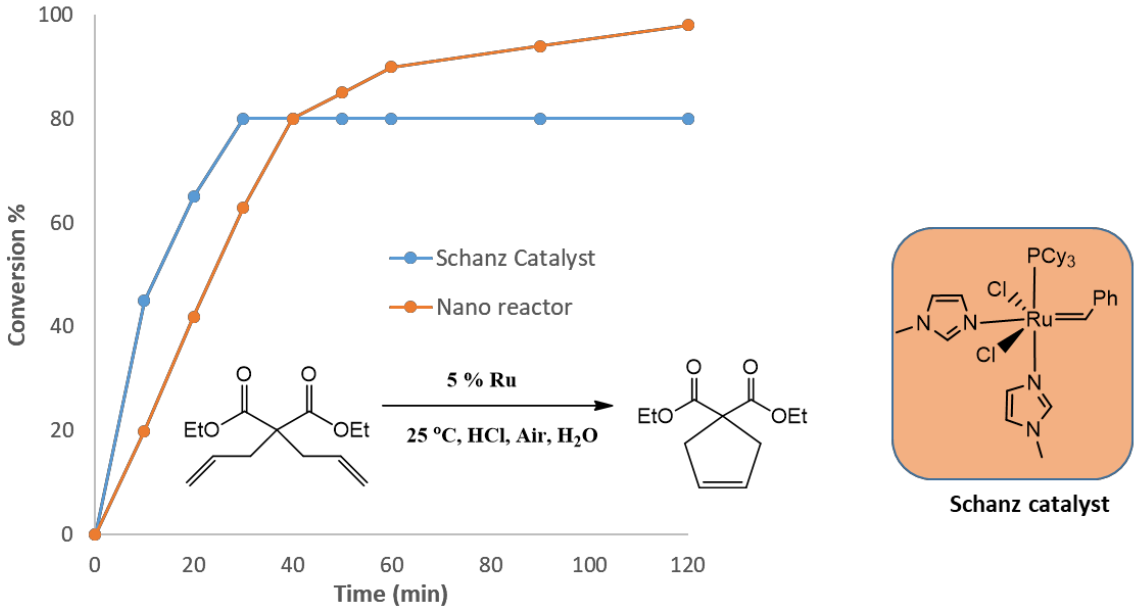


Figure S6. Separation of RCM product



Reaction Conditions: A beaker was charged with 10 ml of water and a magnetic stirrer. Schanz catalyst (8.5 mg, 0.012 mmol) was dissolved in diethyldiallyl malonate (58 µL, 0.24 mmol) and CH_2Cl_2 (50 µL) in a 1 ml vial. Catalyst solution was added dropwise to the beaker under a constant stirring rate of 1000 rpm. HCl (2M) was added (HCl/Ru; mol/mol; 80/1) in one portion to initiate the reaciton.

Figure S7. Comparison of RCM reaction kinetics of nano-reactors and Schanz catalyst in water