

Catalyst influence on undesired side-reactions in the polycondensation of fully bio-based polyester itaconates

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Supporting Information

Size Exclusion Chromatography (SEC) Measurements

Determination of the molar mass distribution was performed by SEC measurements with tetrahydrofuran as eluent and with polystyrene-calibration in the range of 162 g/mol to 70,000 g/mol. Three columns SDV 1000A at 40°C, a variable UV-detector (here: 254 nm), a refractive index detector and the software (WinGPC Unity) were provided by Polymer Standard Service (Mainz, Germany). Samples of the polycondensation reaction of Itaconic acid with 1,3-propanediol in the presence of methanesulfonic acid (MSA) and zinc acetate ($\text{Zn}(\text{OAc})_2$) were taken after 6.5, 7, and 7.5 hours. The molecular weight distribution for the polycondensation reaction with MSA is shown in figure S1, for $\text{Zn}(\text{OAc})_2$ in figure S2. In addition, figure S3 shows the molecular weight distribution of both reaction at 7.5 h.

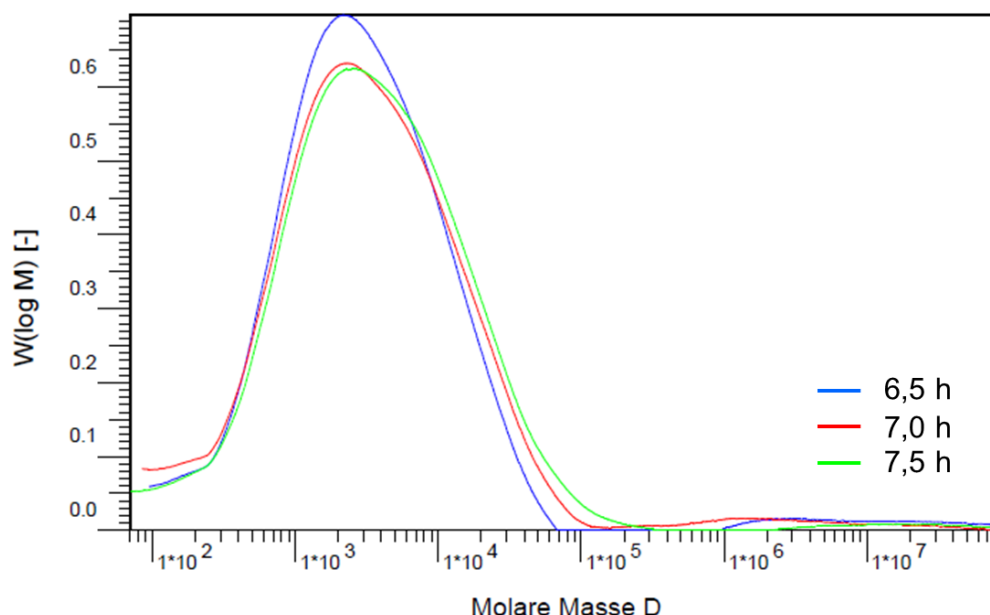


Figure S1. SEC traces of the polycondensation reaction of itaconic acid with 1,3-propanediol in the presence of MSA as catalyst.

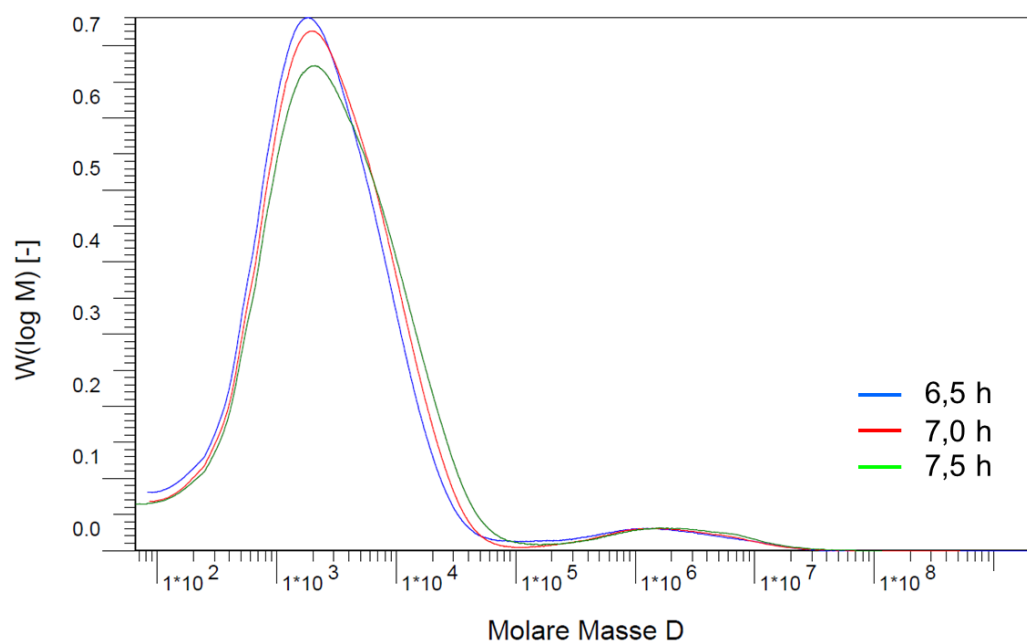


Figure S2. SEC traces of the polycondensation reaction of itaconic acid with 1,3-propanediol in the presence of $\text{Zn}(\text{OAc})_2$ as catalyst.

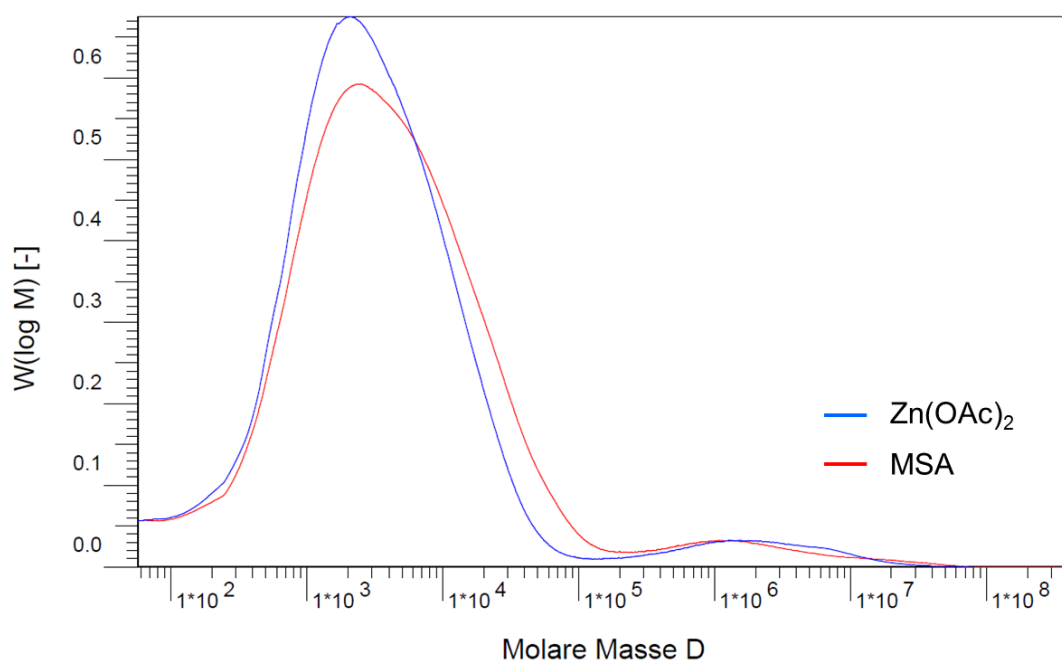


Figure S3. Comparison of the SEC traces of the polycondensation reaction of itaconic acid with 1,3-propanediol after 7.5 h in the presence of MSA and $\text{Zn}(\text{OAc})_2$.