Supporting Information belonging to

Esterification in an autonomously controlled Reactor: exploiting the chemo-mechanical Properties of a smart Organogel

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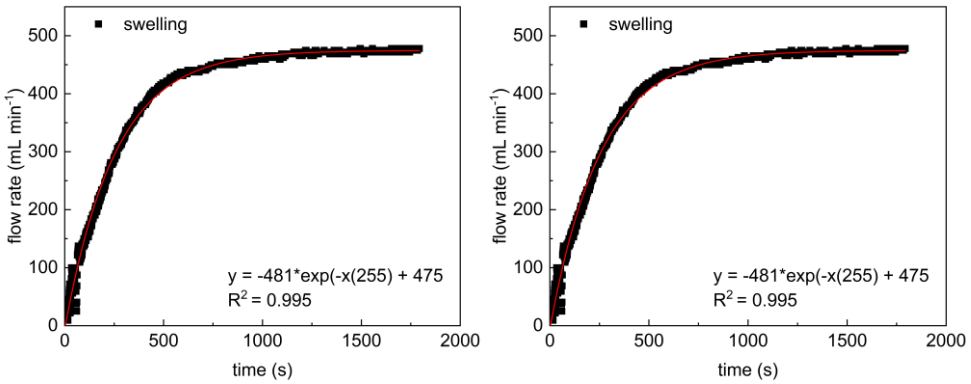

Figure S1. Kinetic analysis of the chemo-mechanical actuation under flow conditions. a) shrinkage during the transition to the collapsed state (triggered by ethyl acetate) and determination of the time constant by a non-linear exponential decay fit and b) corresponding swelling kinetics induced by ethanol.

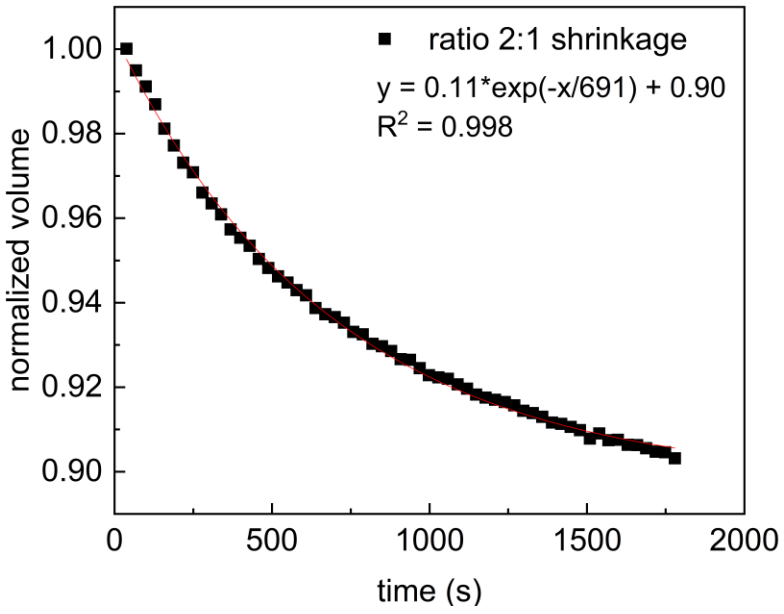

Figure S2. Determination of the swelling half-life time ($t_{1/2}$).

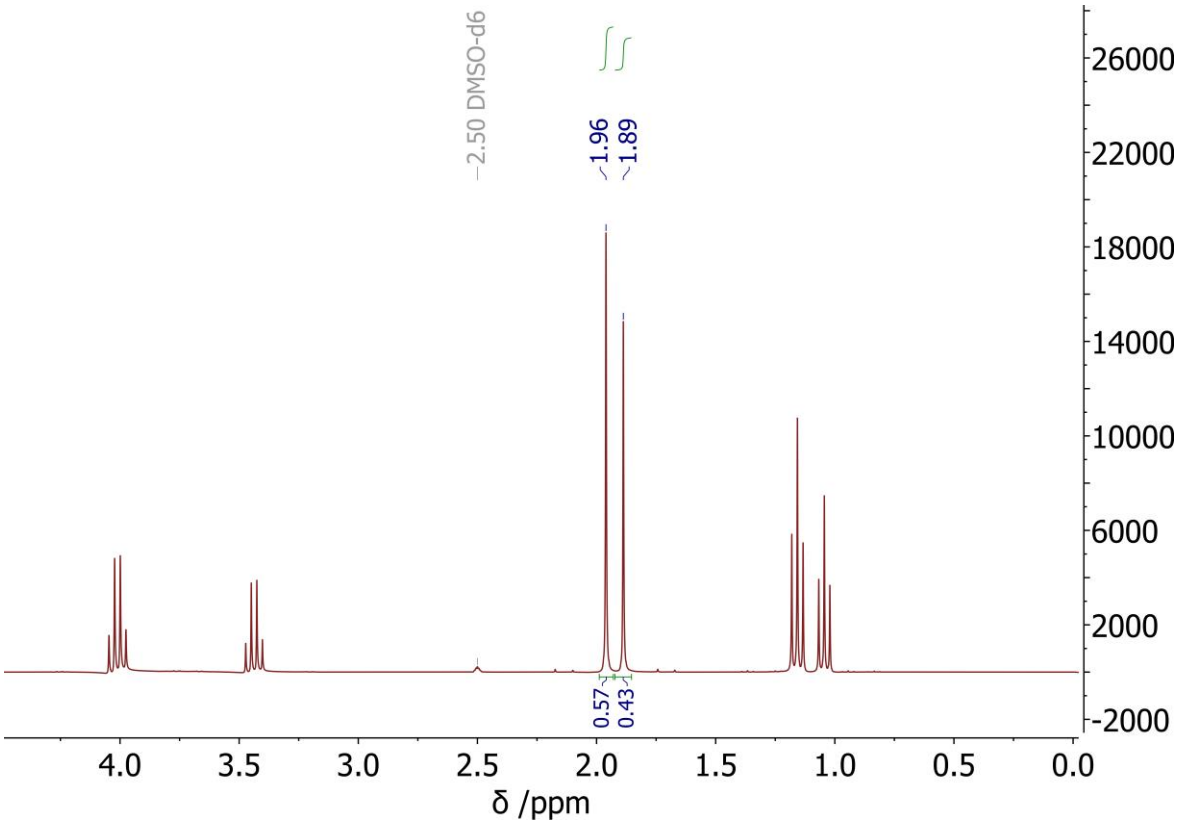

Figure S3. ^{1}H NMR spectrum of the esterification reaction mixture after 5 h. The esterification of ethanol and acetic acid was performed at a 1:1 molar feed ratio and 50 °C using 10 wt% Amberlite® IRC120H as catalyst (measured in DMSO-d_6) ^{1}H NMR (300 MHz, DMSO) δ 4.01 (q, J = 7.1 Hz, 2H), 3.44 (q, J = 7.0 Hz, 1H), 1.96 (s, 3H), 1.89 (s, 3H), 1.16 (t, J = 7.1 Hz, 3H), 1.04 (t, J = 7.0 Hz, 3H).

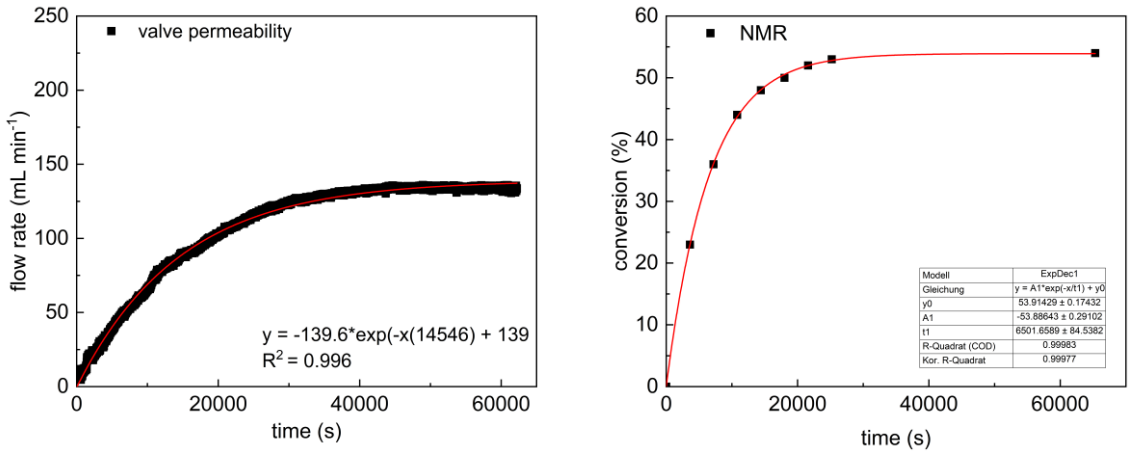

Figure S4. Exponential fitting of the kinetic reaction profile and the resulting valve permeability (pump volume).