

Electronic Supplementary Material (ESI)

Highly Efficient Nano-sized TS-1 with Micro-/Mesoporosity from Desilication and Recrystallization for the Epoxidation of Biodiesel with H_2O_2

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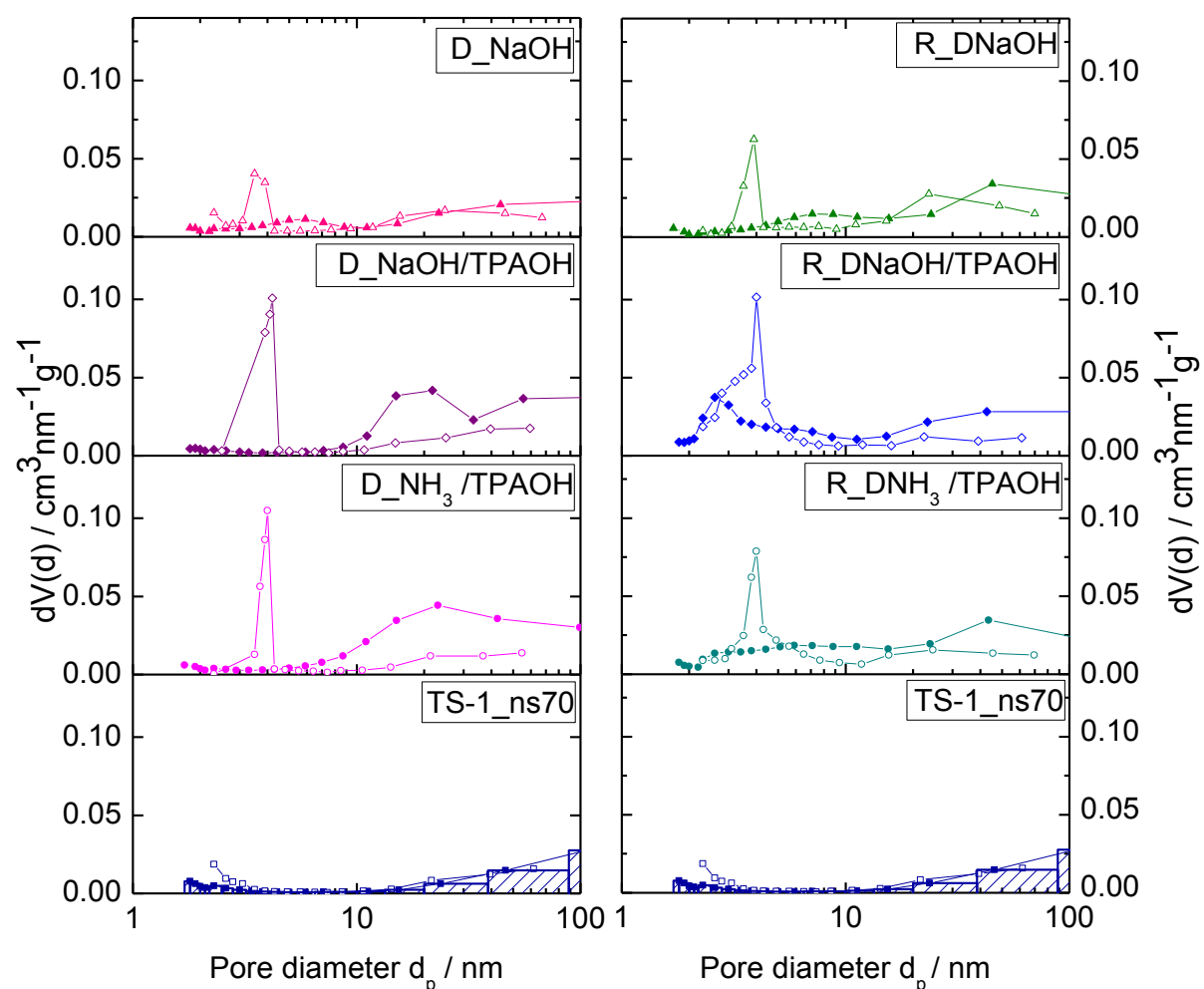


Figure S1: BJH pore size distributions of desilicated (D-series) (left part) and recrystallized TS-1 (R_D-series) (right part) calculated from the desorption branch (open symbols) as well as the adsorption branch (closed symbols) of the nitrogen sorption isotherms. The pore size distribution of TS-1_ns70 is given for comparison.

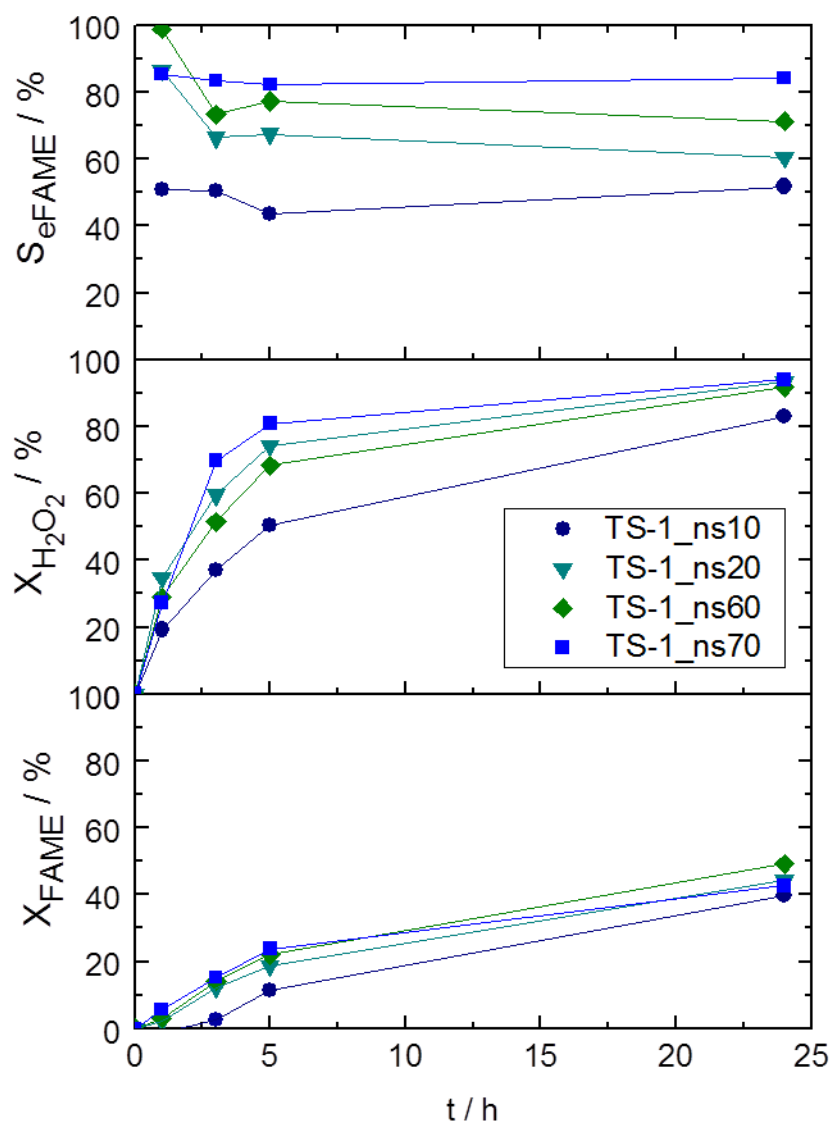


Figure S2: Conversion of biodiesel (X_{FAME}), epoxide selectivity (S_{eFAME}) and conversion of hydrogen peroxide ($X_{H_2O_2}$) as a function of reaction time in the epoxidation of Biodiesel over nano-sized TS-1_ns obtained after different times of microwave irradiation during synthesis ($V_{acetonitrile} = 10 \text{ cm}^3$, $c_{FAME} = 0,03 \text{ mol L}^{-1}$, $(n_{H_2O_2}/n_{FAME}) = 5 \text{ mol mol}^{-1}$, $m_{cat.} = 150 \text{ mg}$, $T = 323 \text{ K}$).

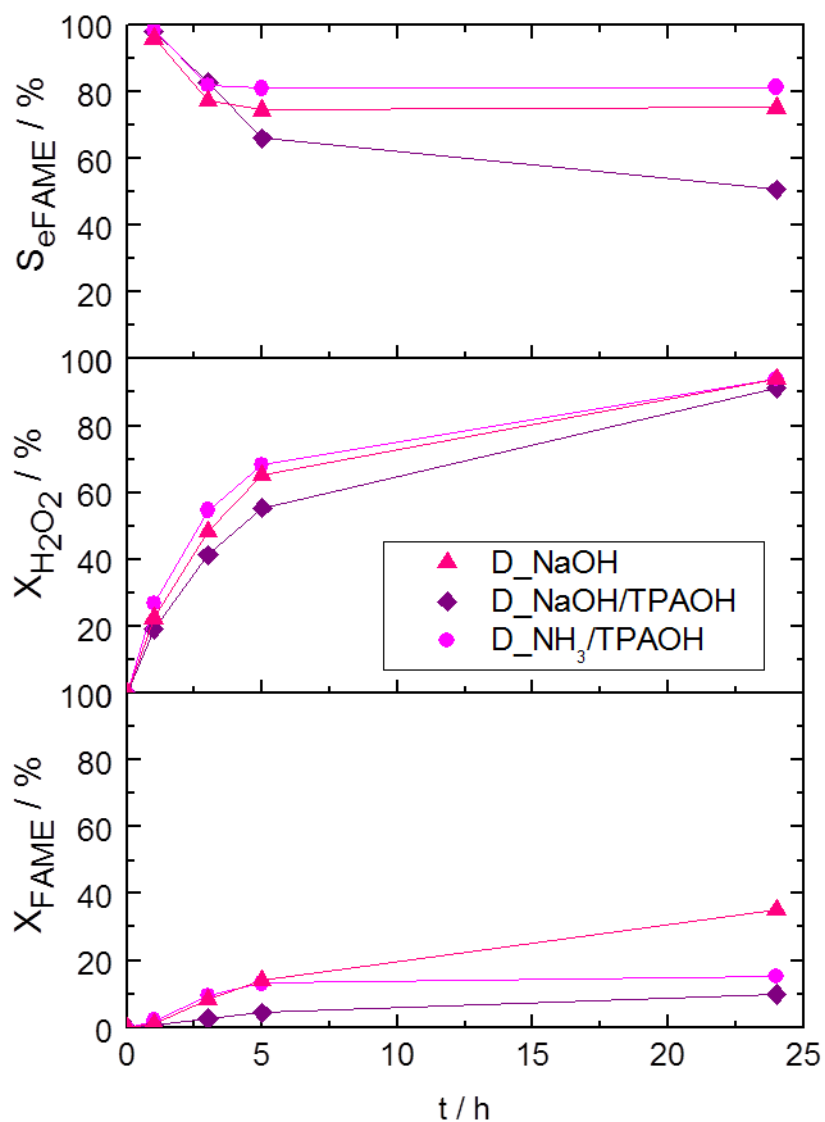


Figure S3: Conversion of biodiesel (X_{FAME}), epoxide selectivity (S_{eFAME}) and conversion of hydrogen peroxide ($X_{H_2O_2}$) as a function of reaction time in the epoxidation of biodiesel over desilicated nano-sized TS-1 (D-series) ($V_{acetonitrile} = 10 \text{ cm}^3$, $c_{FAME} = 0,03 \text{ mol L}^{-1}$, $(n_{H_2O_2}/n_{FAME}) = 5 \text{ mol mol}^{-1}$, $m_{cat.} = 150 \text{ mg}$, $T = 323 \text{ K}$).

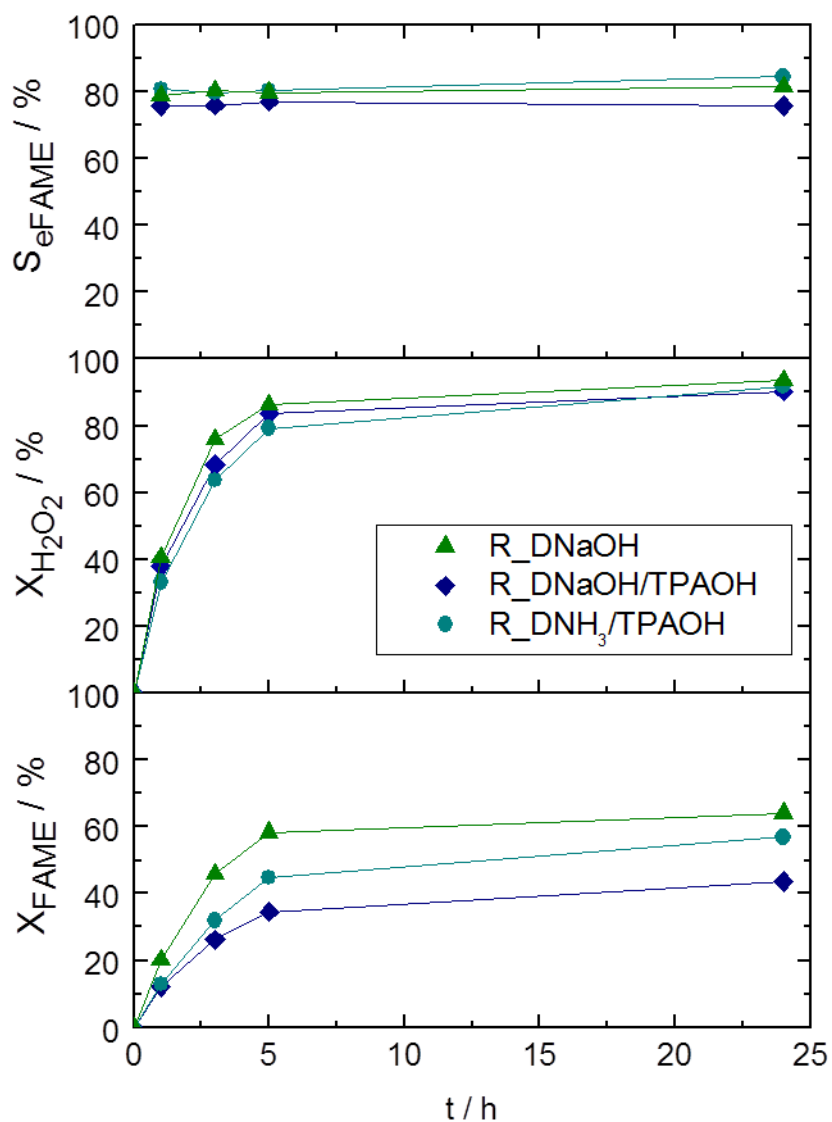


Figure S4: Conversion of biodiesel (X_{FAME}), epoxide selectivity (S_{eFAME}) and conversion of hydrogen peroxide ($X_{H_2O_2}$) as a function of reaction time in the epoxidation of biodiesel over recrystallized nano-sized TS-1 (R_D-series) ($V_{acetonitrile} = 10 \text{ cm}^3$, $c_{FAME} = 0,03 \text{ mol L}^{-1}$, $(n_{H_2O_2}/n_{FAME}) = 5 \text{ mol mol}^{-1}$, $m_{cat.} = 150 \text{ mg}$, $T = 323 \text{ K}$).