Supporting Information

Mechanical Characterization of Hierarchical Structured Porous Silica by in-situ Dilatometry Measurements during Gas Adsorption

Christian Balzer¹, Anna M. Waag¹, Florian Putz², Nicola Huesing², Oskar Paris³, Gennady Y. Gor⁴, Alexander V. Neimark⁵ and Gudrun Reichenauer¹

¹ Bavarian Center for Applied Energy Research, Magdalene-Schoch-Str. 3, 97074, Würzburg, Germany
² Materials Chemistry, Paris Lodron University Salzburg, Jakob-Haringer Str. 2a, 5020 Salzburg, Austria
³ Institute of Physics, Montanuniversität Leoben, Franz-Josef-Str. 18, 8700 Leoben, Austria
⁴ Otto H. York Department of Chemical and Materials Engineering, New Jersey Institute of Technology, University Heights, Newark, New Jersey 07102, United States
⁵ Department of Chemical and Biochemical Engineering, Rutgers, The State University of New Jersey University, 98 Brett Road, Piscataway, New Jersey 08854, United States

6 Pages, 5 Figures, 0 Tables
Figure S1: N$_2$ adsorption isotherm at 77 K (a) and corresponding strain isotherm (b) of the sample Sint750. Full symbols denote experimental adsorption, open symbols experimental desorption. The red solid line is the result of the theoretical modeling. The red dot in the theoretical strain isotherm marks the point of capillary condensation.
Figure S2: \( \text{N}_2 \) adsorption isotherm at 77 K (a) and corresponding strain isotherm (b) of the sample \( S\text{int850} \). Full symbols denote experimental adsorption, open symbols experimental desorption. The red solid line is the result of the theoretical modeling. The red dot in the theoretical strain isotherm marks the point of capillary condensation.
Figure S3: N₂ adsorption isotherm at 77 K (a) and corresponding strain isotherm (b) of the meso-macroporous sample Sint950. Full symbols denote experimental adsorption, open symbols experimental desorption. The red solid line is the result of the theoretical modeling. The red dot in the theoretical strain isotherm marks the point of capillary condensation.
Figure S4: Experimental data (dots) and modeling (red lines) for sample \textit{Sint750}, on a logarithmic relative pressure scale.
Figure S5: Experimental data (dots) and modeling (red lines) for sample Sint850 on a logarithmic relative pressure scale.