

Abstract Submitted
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Synthesis of Swellable Organically Modified Silica at Various Temperatures and Concentrations¹ TYLER BRANSCUM, PAUL BONVALLET, The College of Wooster — OsorbTM is the trade name for a class of swellable organically modified silica (SOMS) materials. It is remarkable in its extreme hydrophobicity, reusability, and ability to absorb many times its mass and volume in organic solvents. A range of SOMS was synthesized using different concentrations of the precursor bis(trimethoxysilyethyl)benzene (BTEB) at various concentrations and ratios of acetone to water. The highest-swelling sample absorbs 74 mL of acetone per gram of material. Temperature was also varied during production of the SOMS. At low temperature (0-25C), dilute BTEB produces a lower-swelling SOMS, while at higher temperature (45C) the dilution enhances the swellability of the resulting material. Tests were conducted on the samples to determine the amount of force generated by the SOMS as they swell upon exposure to acetone. Some of the 100 mg samples produced in excess of 195 N of force. The relationship between the swell properties of a sample and the force that sample generates during a swell was explored; however, no discernible correlation was found between these two properties.

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