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Controlling the Porosity of Non-Porous Organic Crystals. J.L. Atwood, Dept. of Chemistry, Univ. of Missouri-Columbia, Columbia, MO 65211 USA.

In late 2002 we reported (1) that sublimed *p*-tert-butylcalix[4]arene crystals undergo single-crystal-to-single-crystal phase transitions upon guest uptake and release. The calixarene does not possess pores or channels in the solid state. However, despite a lack of porosity of the material, guest transport through the solid occurs readily until a thermodynamically stable structure is achieved. In May 2004 we further reported (2) that sublimed *p*-tert-butylcalix[4]arene crystals absorb gases with remarkable specificity, but without the benefit of a phase change. In this presentation I will describe the manner in which organic crystals related to sublimed *p*-tert-butylcalix[4]arene crystals may be engineered so as to control the porosity with respect to gas absorption.

(1) Atwood, Barbour, Jerga, Schottel, *Science* 2002, 298, 1000.

(2) Atwood, Barbour, Jerga, *Angew. Chem. Int. Ed. Engl.* 2004, 43, 2948.