

NMR studies of benzene mobility in metal-organic framework UiO-67

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The self-diffusion of benzene adsorbed in the Zr(IV)-based metal-organic framework UiO-67 was studied by Pulse Gradient Stimulated Echo (PGSTE) NMR at 35 °C. The measurements were carried out on a low field instrument operating at 20 MHz proton frequency, capable of producing field gradients up to 4 T/m. Using a 13-interval pulse sequence, the effective self-diffusion was measured as a function of the square root of the diffusion time, and suggested that the confined benzene molecules interacted significantly with the internal surface of the MOF matrix during their diffusional motion.