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The Orientation Control of Iodine Molecules inside nano-scale channels DINGDI WANG, JUANMEI HU, WENHAO GUO, SHENGWANG DU, Z.K. TANG, Hong Kong University of Science and Technology — We demonstrate a technique to control the spatial orientation of iodine molecules inside nano-scale channels of an $AlPO_4$-11 zeolite crystal. The orientation of iodine molecules can be precisely controlled by the water molecule density inside the channels due to the interaction between iodine and water molecules. Without the presence of water molecules, all the embedded iodine molecules are directed along the direction of nano channels. As increasing the number of water molecules, the iodine molecules gradually "stand up" insde nano channels. The experimental results obtained from polarized Raman spectroscopy agree well with the theoretical analysis using molecular dynamics simulation. This technique may be used for engineering molecular orientation in nano-structured devices.

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