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标题: THz Time-Domain spectroscopy of selected molecular sieves and their related compounds
作者: Li, T (Li, Tao); Dai, C (Dai, Chao); Tian, L (Tian, Lu); Miao, Q (Miao, Qing); Zhao, K (Zhao, Kun)
编者: Yao J; Zhang XC; Yan D; Liu J
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摘要: The spectral characteristics of selected molecular sieves (3A, 4A, 5A, 13X and synthetic zeolite) in a terahertz (THz) range were studied by THz time-domain spectroscopy technologies (THz-TDS). The chemical composition of a molecular sieve is M-x/n[(AlO2)x center dot(SiO2)y]center dot zH(2)O, where M is metal cation and n is the valence of the metal cation. The absorption coefficients and refractive indices were extracted in the spectra. Different from that of the A-type molecular sieves, the absorption curves and refractive indices of synthetic zeolite and 13X molecular sieve display large fluctuation as the frequency change. In addition, two kinds of related compounds (Al2O3 and quartz sand) were studied by using THz-TDS. The Al2O3 shows weak absorption and quartz sand has three typical absorption peaks at 0.89, 1.3, 1.55 THz. The refractive index of Al2O3 is kept at about 1.27 while that of quartz sand show large fluctuations. The present results suggested that the THz spectra of molecular sieves are in dependent of their types and indicated the potential of THz technology for the molecular sieve industry.
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地址: [Li, Tao; Dai, Chao; Tian, Lu; Miao, Qing; Zhao, Kun] China Univ Petr, Coll Sci, Beijing 102249, Peoples R China
通讯作者地址: Zhao, K (通讯作者),China Univ Petr, Coll Sci, Beijing 102249, Peoples R China
电子邮件地址: zhk@cup.edu.cn
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