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Study on Materials for Adsorption of CH_4 and CO_2

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Message from the Guest Editor

Environmental problems related to greenhouse gas emissions encourage scientists to look for materials with interesting CO_2 and CH_4 sorption properties. There are many engineering, chemical, and agricultural fields for which high quality CO_2 and CH_4 sorbents are very valuable in application. The expected sorption properties of materials include not only optimization of their sorption capacity, but also the kinetics of the transport processes of molecules in their pore structure. Depending on the potential application, the shape of the sorption isotherms is also important.

Environmental aspects are often related to enhanced coal bed methane recovery. Mining activity leads to the emission of CH_4, whose greenhouse potential is much higher than CO_2. The capture of CH_4 from ventilation shafts remains a very difficult problem. In this case, the problems result from low CH_4 concentrations in the mixture with air and very high gas flows. Other engineering problems generate further difficulties which require the use of sorbents with specific properties.

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