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Intercalation and Retention of CO_2 in Fluorohectorite Clay at Near-Ambient Conditions

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We show using x-ray diffraction that gaseous CO_2 intercalates into the interlayer space of the synthetic smectite clay fluorohectorite at conditions close to ambient. The rate of intercalation is found to be dependent on the interlayer cation, with about one order of magnitude increased rate in Li-fluorohectorite compared to Na-fluorohectorite. We further show that Lifluorohectorite is able to retain CO_2in the interlayer space at room temperature, which could have applications related to CO_2 capture, transport and storage. De-intercalation starts occurring at temperatures exceeding 30 ˚C.