

## **Dehydration of natural stilbite: An in situ FTIR study**

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### **ABSTRACT**

The dehydration behavior of a natural stilbite sample from Poona (India) was investigated by in situ FTIR. The thermal induced variations of the water molecule bending ( $\nu_2$ ) mode around  $1653\text{ cm}^{-1}$ , the stretching ( $\nu_3$  and  $\nu_1$ ) modes around  $3587$  and  $3426\text{ cm}^{-1}$ , and the corresponding second-order modes in the wavenumber region  $4000\text{--}8000\text{ cm}^{-1}$  were followed as indicative of the dehydration process. The observed spectral variations indicate that stilbite undergoes a transformation at about  $448\text{ K}$  due to the loss of half of the original content of water molecules. The rehydration of stilbite is partial in samples heated up to  $630\text{ K}$ . Concerning both the dehydration and rehydration behaviors of stilbite, our results are in concert with those proposed in the literature. In addition, the growth of a new mode around  $4550\text{ cm}^{-1}$  is observed in the temperature range  $430\text{--}650\text{ K}$  and may indicate the presence of hydroxyl groups created by the breaking of the T-O-T linkages.