The Spectroscopy Analysis of the Hydroquinone Clathrate

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Hydroquinone is a known clathrate former with guest molecules such as methane or xenon. Hydroquinone crystallize into three common structures: alpha(α), beta(β) and beta(β)-empty. The clathrate phase (β phase) of HQ has cavities composed of six hydroquinone molecules terminated at the top and bottom by rings of six hydroxyl groups. These cavities have a radius of about 4.5 Å.
In the current work we research a structural transformation of HQ. In addition to the structural information from the XRD data, Raman spectroscopic data confirms the presence of guest gas such as carbon dioxide, methane, hydrogen contained within β-HQ or β-empty HQ clathrate lattice.