

Inclusion of Molecular Iodine into Channels of the Organic Zeolite Gossypol

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Gossypol, a phenolic pigment extracted from cotton seeds, demonstrates unique ability as a host compound and its polymorphism[1] makes gossypol an interesting object of solid supramolecular chemistry.

Channel-type **zeolite** has been obtained by desolvation of the unstable clathrate of gossypol with dichloromethane. Removal of the solvent molecules does not affect the crystal structure of the host: channels are retained, although they show a slight contraction (4%). Sorption experiments performed in the gas phase or in water showed that the zeolitic form of gossypol can take up molecular iodine. The crystal structure of the gained complex is isomorphic with the structure of the dichloromethane clathrate where hydrogen-bonded columns of gossypol molecules are packed by means of Van der Waals forces into a porous architecture. In the complex, iodine molecules enter the extended cavities of the channels within the zeolitic structure, occupying 1/8 of the possible sites. The host-guest ratio of the obtained product depends on the size of crystallites of the initial zeolite and the absorption temperature. The higher sorption temperature the higher amount of absorbed molecules but the lesser crystallinity of the product. However, the iodine molecules can be removed with the help of vacuum giving back to the initial zeolite.

[1] Ibragimov B.T., Talipov S.A., Zorky P.M., *Supramol. Chem.*, 1994, **3**(2), 147-65.

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