

## WASTEWATER TREATMENT USING ZEOLITE

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The appearance and development of nanotechnology gave new and efficient possibilities for pollutants removal from wastewaters by using new compounds called nanomaterials which possess unique structural and morphological properties.

Zeolites can be efficient in wastewater treatment because of their multiple reasons such as: the possible regeneration and reuse, high internal surface areas, ability to lose and gain water reversibly and to exchange some of their constituent elements without a major change of structure, high efficiency for retaining various pollutants in their structure since will provide a high accessibility of them into the structure and at the active sites (adsorption), possibility of recovery of the pollutant compounds after their regeneration (without creating new waste).

Zeolites display unique physical and chemical features and have a variety of industrial applications. The purpose of this research was the study of ZSM-5 type zeolites for wastewater depollution by removal of two heavy metals ( $Pb^{2+}$  and  $Cd^{2+}$ ).

### References:

- [1] M.N. Chong, B. Jin, C.W.K. Chow, C. Saint, *Water research*, 44(2010) 2997-3027.
- [2] Y.W. Jun, Y.M. Huh, J.S. Choi, J.H. Lee, H.T. Song, S. Kim, S. Yoon, H.S. Kim, J.S. Shim, J.S. Suh, J. Cheon, *J. Am. Chem. Soc.* 127 (2005) 5732-5733.
- [3] K.B. Lee, S. Park, C.A. Mirkin, *Angew. Chem. Int. Ed.* 43 (2004) 3048-3050.
- [4] M. Kawashita, M. Tabaka, T. Kokubo, Y. Inoue, T. Yao, S. Hamada, T. Shinjo, *Biomaterials*, 26 (2005) 2231-2238.
- [5] A. Jordan, P. Wust, R. Scholz, B. Tesche, H. Fahling, T. Mitrovics, T. Vogl, J. Cervos-Navarro, R. Felix, *Int. J. Hyperthermia* 12 (1996) 705-722.