

## Characterization of zeolite or carbon nanotube composite prepared by hydrothermal method

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**Abstract:**

With the usage of hydrothermal method, a hybrid composite of NaY zeolite and amine Modified Multi Walled Carbon Nanotube (MWCNT) has been combined and the resulted composite of NaT/CNT (NC composite) was defined through X-Ray Diffraction (XRD), Brunauer-Emmett-Teller (BET) surface area analysis, Scanning Electron Microscopy (SEM) and Fourier Transform Infrared (FT-IR) spectroscopy. The results showed that crystal structures of NC composite are similar to the structures of pure NaY zeolite. In contrast, the surface area and pore volume of the NC composite had been developed. The production of MWCNTs and NaY combination leads to the increased nucleation sites which finally results in the formation of smaller zeolite crystals. Moreover, due to the increased micro-pore volume, gas adsorption capacity and selectivity of NC composite have increased. It is worthy to note that NC composite is a useful material for separating and purifying the gases.

**Keywords:**

Carbon nanotube, composite, zeolite