

## عنوان مقاله:

Hydrodynamic Studies of Fluidized Bed Chemical Vapor Deposition Reactors to Produce Carbon Nano Tubes via Catalytic Decomposition over Co/Pd MgO

## محل انتشار:

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## خلاصه مقاله:

In this study, carbon nano tubes have been successfully synthesized in a fluidized bed chemical vapor deposition (FBCVD) process over bi-metallic Co/Pd catalyst supported on MgO. The hydrodynamic studies of fluidized bed reactor has been reported in terms of pressure drop, minimum fluidization velocity and bed volume expansion to contribute to the optimization of the Carbon Nano Tubes (CNTs) production parameters in fluidized bed reactors. Minimum fluidization velocity and pressure drop, as the most important parameters, were taken into account for the investigation of the hydrodynamic behavior of the catalyst particles inside the fluidized bed and CNTs growth and deposition. The effect of carbonous gas to inert gas ratio (CH<sub>4</sub>:N<sub>2</sub>) was studied based on design of experiment (DOE) using Response Surface Methodology. It was found that N<sub>2</sub>:CH<sub>4</sub> flow rate ratio must be 3:5 to obtain the highest bed volume expansion for maximum carbon nanotubes accumulation. The carbon nanotubes are multiwalled with diameter of 14 nm and volume bed expansion of 85% occurred when ratio of methane to nitrogen is 5:3. The optimum parameters for higher conversion of methane to CNT occurs when temperature is 1000 °C and the flow rate ratio of .Nitrogen to methane is 3:5 in FBCVD

## کلمات کلیدی:

Fluidized Bed Chemical Vapor Deposition, Hydrodynamic Studies, Carbon Nano Tubes Production

## لینک ثابت مقاله در پایگاه سیویلیکا:

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