

## Effect of Cobalt Catalyst Confinement in Carbon Nanotubes Support on Fischer-Tropsch Synthesis Performance

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### Abstract

Pre-treating the multi-walled carbon nanotubes (CNTs) support by refluxing in 35 volume% nitric corrosive followed by warming at the temperature of 600°C to 900 °C and results in the development of imperfections on the carbon nano tubes. Expanding in the temperature of the pre-treatment of the carbon nanotubes from 600 °C to 900 °C, upgraded the part of cobalt-oxide nanoparticles exemplified in the channels of carbon nanotubes from 31% to 70%. The demonstration of cobalt just as carbon nanotubes in fischer-tropsch blend (FTS) was assessed in a fixed-bed small scale reactor at a temperature of 240 °C and a weight of 2.0 MPa. The most noteworthy cobalt change got over Co/CNTs.A.900 was 59% and it dropped by ~3% following 130 hour of time-on-stream. In any case, greatest cobalt change utilizing Co/CNTs.A.600 impetuses was 28% and it will be diminished quickly by about 54% following 130 hours of time-on-stream. This discovery shows that the joined corrosive and warm pre-treatment of carbon nanotubes support at 900 °C and furthermore it improves the strength and movement of the Co/CNTs impetus in FTS.

### Biography

Omid Akbarzadeh is working with Nanotechnology and Catalysis Research Centre since 2016. His main research area is heterogeneous catalysis and catalytic reaction engineering. He has spent 10 years in academic-industrial projects as a research officer and post-doctoral. Dr. Omid has worked 5 years in the oil and gas industry as a chemical engineer. He developed advance smart catalysts especially for oil and gas industries. Dr. Omid has contributed to two PETRONAS Research Sdn Bhd industrial catalyst projects and worked on international Airbus R&D project in NANOCAT. Currently, he is the PI of graphene catalyst project in Hokkaido University in Japan, project member of FRGS grant in UTP and assigned to the NANOCAT center project. Dr. Omid was the Chairman, keynote speaker and organizing committee of many international conferences. He is currently supervisor of three Ph.D. students from different countries. He has published many ISI papers; book chapters and has two approved and granted patents. Also, he has hands-on experience and passed several pieces of training on handling different types of equipment which are being widely used for material synthesis, characterization and performance evaluation. He is in close collaboration with other departments, government agencies and universities around the world. He is visiting researcher of Jiangsu University China and Hokkaido University Japan. He is member of the society of petroleum engineers (SPE) and Senior Member of Hong Kong Chemical, Biological & Environmental Engineering Society. Omid awarded full fellowship from UTP during Ph.D and were involved for lab demonstrator and teaching in the different courses of chemical engineering. He awarded Silver Medal in 27th International Invention & Innovation Exhibition (ITEX 2016), Kuala Lumpur Convention Center in Malaysia and Silver Medal of Post Graduate Research Project in 35th Science & Engineering Design Exhibition (SEDEX 35).



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