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Shaped carbon nanomaterial supports based heterogeneous catalytic systems for various green routes of chemical synthesis

Vilas M Ravat
Reliance Industries Limited, India

Carbon materials are excellent supports from an industrial point of view due to their wide availability and environmental acceptability. They are stable in both acidic and basic environments and allow facile recovery of the precious metals by burning off the carbon after catalyst deactivation. Recently, shaped carbon nanomaterial (HCSs, CNFs, CSs, CNTs etc.) have attracted a lot of attention as supports for metal nanoparticles. The deposition of active metal on shaped carbon nanomaterial affords advantageous substrates because most of the metal nanoparticles are expected to be exposed and accessible to the reactant. However, for selective deposition of metal require heteroatom activation of carbon which increases dispersion and stability of metal particles. Shaped carbon nanomaterials have recently been demonstrated to be promising metal-free alternatives for low-cost catalytic processes. Among the various heterogeneous catalysts, Pd and Pt supported shaped carbon nanomaterial catalysts have attracted much attention due to their availability for various green routes of fine chemical synthesis. However, ACs are still widely chosen as hydrogenation, electrolysis and oxidation catalyst supports due to their ease of preparation and low cost. The challenge remains to improve the cost-effectiveness of shaped carbon nanomaterial to make them an economically acceptable alternative to ACs as supports for chemical reactions.

Biography

Vilas M Ravat has completed his PhD from Indian Institute of Technology, Bombay, India, Postdoctoral studies from University of Witwatersrand, Johannesburg, South Africa. He is a Research Scientist at Reliance Technology Group, Mumbai. He has published more than 13 papers in reputed journals. His research interest includes mesoporous, zeolite and carbon based catalysts for green routes of fine chemical synthesis, hydroprocessing and environmental applications.

Vilas.Ravat@ril.com

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