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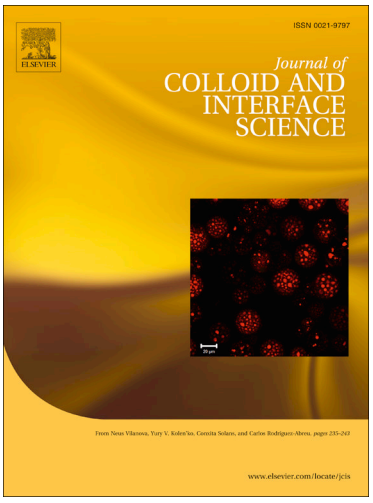

A novel photocatalytically active mesoporous metal-free PPy grafted MWCNT nanocomposite

Balakumar Vellaichamy, Prakash Periakaruppan, Ramya Arumugam, Kathiresan Sellamuthu, Bhuvana Nagulan

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A novel photocatalytically active mesoporous metal-free PPy grafted MWCNT nanocomposite

Balakumar Vellaichamy [a], Prakash Periakaruppan [a]*, Ramya Arumugam[a], Kathiresan Sellamuthu [b] and Bhuvana Nagulan [c]

[a] Department of Chemistry,
Thiagarajar College, Madurai – 625 009,
Tamil Nadu, India.

[b] Department of Materials Science,

School of Chemistry, Madurai Kamaraj University,

Madurai – 625 021, Tamil Nadu, India.

[c] Department of Chemistry,
Jeppiaar Institute of Technology,
Chennai – 631 604, Tamil Nadu, India.

* E-mail: kmpprakash@gmail.com

*Tel: +91 9842993931; Fax: +91 4522312375

Abstract

A new mesoporous metal-free functionalized multi-walled carbon nanotube (f-MWCNT) covalently grafted polypyrrole (PPy) nanocomposite has been synthesized via chemical oxidative polymerization method keeping different weight ratio of f-MWCNT (1-4). Various instrumentation techniques such as UV-DRS, FT-IR, XRD, Raman, TGA, BET and TEM were used to characterize the as-prepared nanocomposite. The successfully constructed photocatalytically active mesoporous metal-free PPy grafted MWCNT nanocomposite was employed for the decontamination of nitrobenzene (NB). Among all the catalysts, f-MWCNT-PPy (3) is found to be efficient due to a large specific surface area and high pore volume by which 99.9% reduction has been achieved within 60 min. The obtained mesoporous, covalently grafted and synergistic f-MWCNT-PPy can be used as an efficient and recyclable photocatalyst