International Journal of Advance Research in Science and Engineering
Vol. No.6, Issue No. 07, July 2017
www.ijarse.com
IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

Synthesis and Characterization of Polyaniline-Carbon Fiber Composites

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In this work, we synthesized a strategy for uniform coating of polyaniline on carbon fiber for their potential use in various fields. β–Naphthalenesulphonic acid (β–NSA) was used as surfactant and dopant which offers the uniform coating on Carbon fiber. Polyaniline (PANI)–Carbon fiber composites have been prepared by chemical oxidative polymerization route whose conductivity lies in the range 10.73–23.5S/cm. The TEM analysis of composites reveals the presence of thick and uniform coating of PANI over surface of carbon fiber. The SEM of PANI– carbon fiber also revealed the nonporouscoating, which can be used for selective incorporation of other carbon forms. Morphology of PANI– carbon fiber shows the incorporation of carbon fiber in PANI matrix. Such planned conformally polymer coated carbon fiber could be a favourable candidate for next generation building block material in numerous applications.