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Synthesis of EPDM rubber coconut leaves activated carbon composite for automobile application

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This paper reports on usability of activated carbon obtained from coconut leaves (CL) as a filler to prepare Ethylene-propylene-diene monomer (EPDM) based composite for automobilebased application. The carbon is prepare and activated by phosphoric acid (H_3PO_4) as dehydrating agent and was sieved for mesh size of CL-355, CL-710, CL-500, and CL-53. The stoichiometric ratio of phosphoric acid to biomass is maintained as 3:1 for 300 g of batch size.CL-355 given optimised results for yield, methylene blue number, Iodine number and surface area found greater as compared with the CL-710, CL-500, CL-53. CL- 355. Hence CL-355 mesh size activated carbon was adapted for further study. SEM was studied to know the morphology of activated carbon. Compounding is carried out on a two-roll mill and at 160°C. As compared to commercially available carbon filler, the activated carbon derived from coconut leaves biomass waste responded better to the petrol swelling test. Activated carbon derived from coconut leaves was appeared to be the best for percent swelling and percent deviation in hardness. The composite prepared are of 40 parts per hundred (Phr) basis.

Speaker Biography

Abhijit S Jadhav is a founder faculty member of Department of Chemical Engineering, AISSMS College of Engineering, India. He earned a Bachelor of Chemical Engineering (1994), a Master of Engineering (2008), and is pursuing a PhD (Chemical Engineering) from Birla Institute of Technology, India. He has developed "STOPPER" a composite product from EPDM/Coconut leaves activated carbon in association with Pallavi rubber ltd. India for automobile application. He has conducted several lectures in Industry and colleges. For the past 20 years, Abhijit has taught various Chemical Engineering subjects in AISSMS College. His interests includes: interactive learning; scaffolding lessons for all skill levels; and incorporation of technical innovative ideas within his classroom. He is a member of the organization, "Institution of Engineers", "Indian Institute of Chemical Engineers", "Indian Society of Technical Education".

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