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Title: Mechanical characterization of PEEK-HA composite as an orthopedic implant

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Nowadays research in the biopolymers are prominent area for research in medical fields. The metallic implants are used in many numbers for the orthopedic surgeries. But some unavoidable issues are arising after surgeries like stress-shielding, osteogenesis imperfection, etc. To overcome such issues re-surgery is only one painful option available for the patient. Sometimes this option is not feasible for the weak and old patients. Which results in increased the life risk in such situation. Hence a biopolymer may be the best solutions to eliminate such problems. Polyether ether ketone (PEEK) and Hydroxyapatite (HA) are having biocompatible characteristic with different Mechanical properties. Hence in this paper three different compositions of PEEK-HA are considered and the composites were prepared using compression moulding technique. To compare the mechanical properties for different compositions of PEEK-HA, the porosity and tensile strength were calculated. Unlike the other techniques, the fracture toughness was evaluated through J- integral method to ensure the matching of the cracking phenomenon with the human bone. Tribological properties e.g. wear resistance and plasticity index for all compositions of PEEK and HA were executed in both static and dynamic mode. The result reveals that, PEEK5HA can be used for the possible bone replacement.

Biography

Sujoy Kumar Dey has completed his PhD at the age of 39 years from Mechanical Engineering Department, North Eastern Regional Institute of Science and Technology, Nirjuli, Arunachal Pradesh, India. He is working as a Assistan Professor in Sikkim Manipal University, Majitar, India, a premier university of India. He has published more than 5 (2 SCIE)papers in reputed journals and has been serving as an editorial board member of repute. He has one patent also.