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Bio Inspired Engineering Materials Advancement

Mrs. Kanchan S. Aher, Mrs. Ashita R. Shandilya, Mr. Kiran S. Kedare Mechatronics Department

Guru Gobind Singh Polytechnic, Nashik

Abstract: Nature has served as an exceptional source of inspiration for engineering materials, leading to the development of bio-inspired materials that exhibit superior mechanical, structural, and functional properties. This paper explores the significance of bio-inspired engineering materials, their fundamental principles, and their diverse applications in fields such as aerospace, biomedical engineering, and structural design. By mimicking natural structures like nacre, spider silk, and lotus leaves, researchers have developed advanced materials with enhanced durability, flexibility, and self-cleaning properties. The future of bio-inspired materials lies in their integration with nanotechnology and additive manufacturing, promising innovative solutions for engineering challenges.

Keywords: Bio-inspired materials, bio mimicry, engineering materials, nanotechnology, additive manufacturing

