



University of Hawai'i at Mānoa

Hawai'i Natural Energy Institute

School of Ocean & Earth Science & Technology

Fabrication of conductive 3D scaffold electrodes AND Characterization of polymers used to immobilize fuel cell enzymes using fluorescence

Chitosan is a polyionic biopolymer that has been widely used as a material to which tissue cells are attached, biomolecules are entrapped, or enzymes immobilized. In this work we present, to our knowledge for the first time, the concept of macroporous and highly-conductive chitosan and chitosan-carbon nanotube (CHIT-CNT) composite scaffolds as an advanced material for fabrication of biofuel cell electrodes that support both mediator and direct electron transfer processes. We also present fluorescent microscopy as a technique to investigate chitosan and its derivative as an immobilization matrix for biocatalytic enzymes.

Carolyn Lau
Georgianna Martin
Post-Doctoral Fellows
Hawai'i Natural Energy Institute

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