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BIOTECHNOLOGY

Members of the biotechnology group conduct fundamental research and pursue technology and product development in bioenergy, biomaterials, and marine bioresources. Novel technologies for biohydrogen, biodiesel, and other bioenergy production are a big theme in this group. Active research also involves value-added products from renewable resources via innovative microbial synthesis and biotechnology. The technologies in use and/or development include enzymatic catalysis and immobilization, biokinetics and biogenetics, metabolic flux analysis and engineering, DNA recombinant technology, photobiological and dark fermentation, recovery of small and macromolecules, and bioprocess simulation and design. These research activities are supported by federal and industrial grants and contracts.

Specific Research Areas

Principal Investigator Michael Cooney?s [1] research interests include charge transfer in enzyme fuel cells, biodiesel, two-phase anaerobic production of hydrogen and methane (H_2 and CH_4) mixtures, hydrogen production in bacterial pathways that occur at essentially zero free energy gain, and the screening of compounds from marine algae that inhibit biofilm formation by marine bacteria. For details on some of Dr. Cooney's specific project activities, see the Bio-Fuel Cells (overview) [2] and Water, Energy and Soil Sustainability [3] sections of our website.

Principal Investigator Jian Yu?s [4] research interests include enzyme/biopolymer conjugation, microbial biosynthesis of thermoplastic and elastic polymers, and hydrogen production from renewable resources. For details on some of Dr. Yu's specific project activities, see the Bio-Oils (overview) [5] and Bioplastics (overview) [6] sections of our website.

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Links:
[1] http://www.hnei.hawaii.edu/staff/michael-j-cooney
[2] http://www.hnei.hawaii.edu/research/fuel-cells/bio-fuel-cells-overview
[3] http://www.hnei.hawaii.edu/projects/water-energy-and-soil-sustainability-wess
[4] http://www.hnei.hawaii.edu/staff/jian-yu
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