URP/Honors Projects at the department of Chemical and Biomedical Engineering

Professor	**Title of Project**
Alamo, R.	• Effect of Melt memory on crystallization of high impact polyolefins • Self-assembly of conjugated novel polyethylenes
Chella, R.	• Computational analysis of biomolecule translocation through nanopores.
Chung, H.	• Development of inorganic-organic hybrid bio-inspired adhesives for enhanced biocompatibility and physical properties. • Synthesis of self-healing/stimuli sensitive polymers using a novel Ruthenium catalysts.
Grant, S.	• Magnetic targeting of SPIO labeled stem cells. • Conductivity mapping in pathological human brain tissue (Parkinson's and Alzheimer's diseases). • Intranasal delivery for cellular therapy.
Guan, J.	
Hallinan, D.	• Natural Materials for Membrane-Free Flow Batteries • Modeling Heat Transfer in Heterogeneous Materials
Hsu, S.	• Novel petroleum biomarkers for exploration (in collaboration with Chinese Academy of Sciences). • Corrosion monitoring and abatement (upstream and downstream) (in collaboration with China University of Petroleum). • Biomass fuels/chemicals production . • Co-processing of fossil and biomass oils with refinery operations.
Kalu, E.	• Simultaneous generation of electricity and value added chemicals in a biofuel redox flow battery • Hybrid electrocatalyst for hydrogen generation from water electrolysis • Glycerol electrooxidation
Li, Y.	• Characterization of stem cell microenvironment • Self-assembly of pluripotent stem cells
Locke, B.	• Water-film plasma reactors for organic chemical synthesis. • Characterization of hydrodynamics in water film plasma reactors.
Ma, B.	• New charge transport molecules for perovskite solar cells. • Luminescent molecular sensors for temperature and viscosity.

	• New organic/inorganic hybrid materials for light emitting diodes.
Ma, T.	• Analysis of fluid field in microcarrier bioreactor using COMSOL • Analysis of oxygen transport in 3D stem cell aggregates.
Mendoza-Cortes, J.	• Simulations of the charge transfer and electronic properties for energy storage devices (batteries, fuel cells, artificial photosynthesis). • Multiscale modeling of chemical reactions from atoms to continuum. • Study of biocompatibility using computational engineering.
Paravastu, A.	• Computational modeling of Alzheimer's β-amyloid oligomers • Design of self-assembled protein nanofibers for regenerative medicine
Ramakrishnan, S.	• Structure and rheology of nano particle gels • Synthesis of polymer particle nano composites for aerospace applications • Mechanisms of self Assembly of peptides into hydrogels
Siegrist, T.	• Crystal Growth for magnetic systems for the Ising model
Telotte, J.	• Cellulose Enzyme Reaction Kinetics • Modeling the Time Response of Small Fuel Cell Stacks to Changes in Load • Analysis on Microwave Assisted Chemical Reactions