Research Topics

Organofluorine Chemistry
• Synthetic organofluorine chemistry
• Organofluorine compounds for biochemical and medicinal applications
• Organofluorine compounds for fuel cell membranes

Lithium Ion Batteries and Materials Chemistry
• Nonaqueous electrolytes for lithium ion and lithium-air batteries
• Technology for improved Surface films on cathodes (SEI)
• Anion Receptors for improved conductivity and cell performance

Medicinal Chemistry
• Design and synthesis of CDK5 inhibitors as therapeutics for Alzheimer’s disease (AD) and cancer
• AGE-inhibitors and AGE-breakers: mechanistic and pharmaceutical studies

Facilities
Multinuclear NMR; GC/MS; ESI/MS; HPLC; FT-IR, Uv-Vis, Fluorescence Spectroscopy; photochemical and Microwave Reactors; Elemental Analyzer

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NASA STTR; ACS-Petroleum Research Fund; Schwab Foundation; UM Interdisciplinary Research; MS&T Technology Acceleration

Design and synthesis of AD-Therapeutics

Organofluorine Compounds in Biology and Medicine,
Reddy, V. Prakash, Elsevier; Amsterdam, 2015

Keywords
Synthetic organic chemistry; organofluorine chemistry; drug discovery; Alzheimer’s disease; oxidative stress; kinase inhibitors; AGE-inhibitors/breakers; NMR; catalysis; nonaqueous electrolytes; lithium ion batteries; superacids, carbocations and reactive intermediates; ionic liquids.

Recognitions/Significant achievements
• NASA Faculty Fellow, Jet Propulsion Laboratory
• Golden Key National Honor Society, Honorary Member, CWRU