NAME: _________________________________________________________________________________________

RESEARCH INTEREST QUESTIONNAIRE

Please rank three of the following major areas in order of preference (1-first preference, 2-second, etc.).

Analytical     Inorganic
________Organic     ________Physical
________Biochemistry     ________Chemical Education

Below is a list of the research interests in our department. Please check the specialty areas which you feel may be of interest to you and return this form with your application.

Analytical Chemistry
___application of multidimensional-NMR to characterization of organic materials, polymers and supramolecular structures
___application of NMR nuclear Overhauser effect to the study of metal ion binding to large molecules
___assessment of the proton and metal ion binding sites in biomolecules and polar polymers.
___charge permutation reactions in the gas phase and their use for structure elucidation
___development of new FT-NMR techniques
___development of triple multidimensional resonance NMR methods
___development and use of NMR and isotopic labeling to solve structure and mechanism
___GULC method development
___GC/MS
___intrinsic chemistry of ionic and neutral intermediates of importance in atmospheric environmental, and biological chemistry
___magnetic resonance spectroscopy
___mass spectrometry and tandem mass spectrometry: development and applications to biomolecules and polymers.
___passive sampling techniques
___pattern recognition
___stable isotope dilution
___biomedical applications of molecular imaging techniques
___application of solid-state NMR to the study of polymers.
___conducting polymers

Biochemistry
___antiviral biopolymers
___antiviral nucleosides
___active site-mapping of enzymes
___bioactive synthetic polymers
___control release of bioactive agents
___design and synthesis of enzyme inhibitors
___enzyme reaction mechanisms
___iron and peroxide in reperfusion tissue injury
___mechanisms of wound healing
___model studies of enzyme reactions
___novel polymers
___structure function relationships in enzymes
___nitric oxide biochemistry drug design
___enzyme structure by NMR
___synthesis and characterization of thin films on metal-oxide surfaces

Inorganic Chemistry & Organometallic
___characterization by multinuclear NMR, and X-ray crystallography
___chemistry of the group 13 and 14 elements
___mechanistic investigation of lithium induced alkyn cyclization reactions
___models of the active sites in transition-metal catalysts
___oligomers and polymers with inorganic backbones
___synthesis of high temperature polymers
___synthesis of non-linear optical materials
___synthesis of organometallic molecular conductors & conducting polymers
___X-ray structural characterization of inorganic, organic & organometallic compounds

Organic Chemistry
___application of enzymatic reactions or organic synthesis
___chemistry of trivalent iodine
___enzyme reaction mechanisms
___mechanisms of organosulfur & organo phosphorus reactions
___new synthetic methods
___reaction mechanisms
___stereoselective metal reductions
___structure elucidation by x-ray
___synthesis of antiviral compounds
___synthesis of heterocyclic compounds
___synthesis of natural products
___synthetic methods
___total synthesis of natural products
___synthesis of dendritic macromolecules
___time resolved spectroscopy
___laser spectroscopy of ultrafast reactions
___photoinduced electron-transfer reactions
___artificial photosynthesis
___supramolecular design and synthesis of molecular sensors
___nano-fabrication of implantable biosensors
___molecular electronics and spintronics
___polymer core-shell nano particles

Physical Chemistry
___development of multiple laser spectroscopies
___theoretical chemistry
___fast kinetic methods, including stopped-flow spectrophotometry and pulse radiolysis
___free radical reaction mechanisms
___high resolution infrared spectroscopy
___intermolecular interactions and charge transfer in excited states
___laser spectroscopic probes of ultrafast phenomena
___nonlinear optical materials.
___photophysics of polymers and biopolymers
___radiation less transitions
___spectroscopy of atmospheric molecules relevant to ozone depletion & global warming
___structure and spectra of electronically-excited molecules
___vibrational dynamics of polyatomic molecules
___surface enhances optical spectroscopy of organic and biomolecules on metal surfaces
___polymer structure and dynamics by solid-state NMR
___physical properties of hypervalent iodine compounds