

INORGANIC CHEMISTRY SEMINAR



Stephanie Aguilar, PhD candidate “ Perfluorophenylazide Photochemistry for Modification of Materials”

Abstract: Polymeric materials are proposed for applications in a variety of fields including and not limited to biomedical applications, electronics, biosensor devices and water treatment. Covalent functionalization of these materials provides an effective means to adjust surface properties. These covalent approaches benefit more than noncovalent alternatives because they are more robust, creating stable attachment of groups with specific functional properties. Specifically, photoinitiated grafting can be performed under mild reaction conditions and low temperatures with high selectivity compared to other grafting techniques. Perfluorophenylazide (PFPA) chemistry has been used as a coupling agent for fluorinated phenylazide, which are capable of forming stable covalent bonds to sp^2 or sp^3 hybridized carbons or nitrogens. This talk will discuss the synthesis of PFPA polymers and small molecules that were used to graft a variety of materials to enhance the materials surface properties. The surface properties altered include increased hydrophilicity and conductivity, smooth surface roughness, and reactivity of the surface. We successfully modified a variety of surfaces and enhanced specifically the rejection and antifouling capacity of water purification membranes. This study opens possibilities to alter the surface properties of a variety of materials with polymers and small molecules in a facile manner.

Wednesday, July 15th, 2020 4:30 p.m.

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