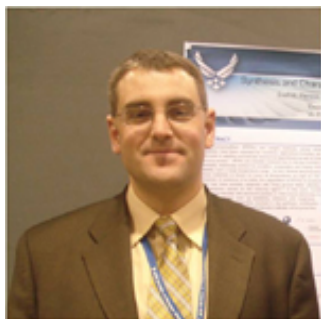

Thursday, February 27th 9:00-10:00 ME Conference Room – ME 106

High Performance Metalized Perfluoropolyether Composites

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Abstract Fluorinated polymeric matrices are an attractive class of materials due to their applicability for use in various environments including use as high performance materials. Specifically, perfluoropolyethers (PFPEs) are low molecular weight oligomeric fluoropolymers that have low volatility, minimal shear thinning, and a viscosity that is nearly independent of temperature making them stable in extreme processing conditions. PFPEs are well-known to undergo accelerated thermal degradation in the presence of native metals and Lewis acids. The work is motivated by the potential of harnessing the energetic behavior as a result of degradation pathways facilitated by exothermic metal-mediated oxidation. Computational modeling/simulation supported by thermal experimental studies showed that nanometer sized aluminum Fomblin-Y (a PFPE) blended formulations produced a viable energetic material. These formulations serve as an additive in commercial, mechanically polymeric matrices including epoxy resins, poly(urethane)s and electro spun fibers from Teflon AF. This work will discuss the preparation, properties, and characterization of these composite systems.



Bio: Since 2002, **Scott T. Iacono** was a research chemist at the Air Force Research Laboratory at Edwards Air Force Base, CA, synthesizing inorganic–organic hybrid fluoropolymers for solid rocket motor propulsion components. In 2010, he joined the Department of Chemistry at the United States Air Force Academy and has since been promoted to associate professor and concurrently serves as the Chemistry Research Center Director. His current research efforts focus on organofluorine methodologies for monomer development for fluorosiloxane polymers, metalized fluoropolymer composites, and fulvene-based conjugated polymers for light emissive applications. He has authored collectively over 60 journal papers, conference papers, and contributed book chapters. Iacono completed his BS at Louisiana State University and PhD studies with emphasis organic and polymer chemistry at Clemson University.