

Title: “Southwest Research Institute: Benefiting government, industry and the public through innovative science and technology”

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Abstract

Southwest Research Institute, SwRI, is a non-profit, contract based, applied research and development organization with its primary 1,200 acre facility located in San Antonio, Texas. Founded in the 1950s, by philanthropist Mr. Tom Slick, the Institute has grown in revenues exceeding a half a billion dollars with offices located across the U.S. and the globe. This two part presentation will include information on the general SwRI organization and method of operation along with examples of several recent and ongoing projects. For those interested in more information related to SwRI, you are strongly encouraged to visit our general website at www.swri.org or our section website at www.MatBioEng.SwRI.org.

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Dr. Rubal performs formulation, synthesis, characterization, and analysis of polymer systems. Recent formulation work at SwRI included: cyclic olefin blends, fire retardant rubbers, antimicrobial thermoplastics, epoxy composites, and drug releasing silicones. Recent synthesis work included: photo-free radical graft polymerizations, polyimide condensation polymerizations, monomer synthesis, and anionic ring opening polymerizations. Recent characterization work included analysis of components by: DSC, TGA, NMR spectroscopy, UV-vis spectroscopy, FT-IR spectroscopy, optical microscopy, titration, and the analysis of gasses by electrochemical cells. Topics of interest include novel antimicrobial releasing materials, gas separation membranes, ion transport membranes, and novel energy generating/storing devices.

Dr. Rubal completed his postdoctoral studies at Texas State University on polyimide gas permeation membranes which included incorporation of nanocomposites and the synthesis of hyperbranched architectures. During this period, he also taught second year organic chemistry.

As a graduate student at the University of Akron, Mr. Rubal studied the structure-property relationships associated with the length of the flexible spacer group on laterally attached side-chain liquid crystalline polymers. By synthesis of a series of model compounds and monomers, as well as the controlled ring-opening metathesis polymerization of the monomers, clear thermotropic and liquid crystalline properties were established for the various spacer lengths. Furthermore, enantiospecific reductions were completed and incorporated into the polymer systems. As an undergraduate at Texas State University, Mr. Rubal became familiar with supercritical fluids and interpenetrating networks.

PROFESSIONAL CHRONOLOGY: Texas State University: postdoctoral associate, 2005-6; Southwest Research Institute: research scientist, 2006-10; senior research scientist, 2010-present.

MEMBERSHIPS: American Chemical Society (Polymer Division), Knights of Columbus