

Research Development Fund – Cover Page Template

SUBMISSION DEADLINE: **March 2, 2018 at 12 noon CDT** to rdf@tamu.edu

(All cover pages will be posted for the campus community to view at <http://rdf.tamu.edu/abstracts>)

Application Title: Enhancing Access to X-ray Scattering instruments for Polymers and Nanoparticles.

Lead contact for RDF Application:

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Key Participating Units: College of Science, College of Engineering, College of Agriculture

Anticipated Request Amount (\$): 200,000

Executive summary of the intended application to utilize Research Development Funds.

Two-Dimensional Wide-angle X-Ray Scattering (WAXS) is an important technique for the characterization of polymers, solids, as well as nanomaterials. Although the use of this technique enjoys a broad precedent in materials research, it is currently not available on our campus. Some recent technological advances have made the conversion of existing diffraction instrument into Wide-angle X-Ray Scattering instruments quite straight forward. In this project, we propose to take advantage of these advances and purchase two new Hybrid Pixel Area Detectors (HPAD). These new detectors will be mounted on two existing X-ray diffraction platforms currently equipped with older detectors that lack the sensitivity needed for the cutting-edge characterization of polymers and nanomaterials. The resulting systems, housed and maintained by the fully staffed Department of Chemistry X-ray laboratory, will add a research capability that is currently non-existent on our campus.

With 35 PIs from 9 different departments and three colleges engaged in polymer research and 14 PIs from 7 different departments engaged in nanomaterials research, addition of the above capabilities to our campus's main X-ray diffraction facility will have a direct impact on the research programs of an interdisciplinary group of users. Last but not least, our proposal will be reinforced by a robust operation and maintenance plan which will involve two full-time PhD scientists who are budgeted employees of the Department of Chemistry and who will train users and maintain the instruments. We will also put in place a fair and affordable fund recovery structure that encourages intense utilization while also making operation and maintenance of these instruments sustainable.