Samuel "Sam" Bynum Ph.D.*

Technical Specialist
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Dr. Sam Bynum is a technical specialist in the Firm's New Orleans office and a member of the Firm's Intellectual Property Group. He brings a deep scientific foundation to intellectual property matters involving chemistry, advanced materials, chemical processes, and biomedical innovations.

Dr. Bynum supports clients with patent preparation and prosecution matters, concentrating his practice on U.S. patent prosecution across the chemical, polymer and materials science, medical device, botanical extract, hydrogel encapsulation, and biotechnology industries. He also assists clients in IP due diligence, patentability assessments, and freedom-to-operate analyses. With more than a decade of hands-on research in polymer chemistry, renewable and non-renewable fuel systems and infrastructure, and degradable biomaterials, Dr. Bynum supports clients in navigating complex patent landscapes by translating technical findings into unique and strategic decisions.

His technical experience has led to the development of insights into renewable fuel storage tank degradation, novel acrylic composites, advances in thermal frontal polymerization, cure-on-demand bone cements, and tunable ZnO quantum dots. He is skilled in polymer synthesis; small molecule and materials characterization; reaction monitoring and kinetics; composite formulations chemistry; surface modification; hydrogel formulation; corrosion and biodegradation chemistry; and fuel degradation chemistry.

Dr. Bynum is the first author and supporting author for multiple peer-reviewed publications, as well as an invited author of a review highlighting the unforeseen aging infrastructure of underground storage tanks. He has presented multiple oral and poster presentations and national, regional, and local scientific conferences and meetings.

Professional Honors & Activities

- Member – American Chemical Society (2014 – present)
- Entrepreneurial Lead – NSF i-Corps LSU Cohort (2017)
- Lead Organizer – 4th Annual Applied Polymer Technology and Engineering Consortium (2016)

Publications

- Lead Author – "Underground Storage Tanks: A Review of an Unseen Aging Infrastructure," *Corrosion* (March 2024)
- Contributing Author – "Rapid Frontal Polymerization Achieved with Thermally Conductive Metal Strips," *Chaos* (July 2021)
- Contributing Author – "Thermal Transport and Chemical Effects of Fillers on Free-Radical Frontal Polymerization," *Journal of Polymer Science* (July 2020)
- Lead Author – "Influencing Factors on the Velocity and Temperature of Propagating Fronts in Acrylate Composites," LSU Doctoral Dissertation (December 2019)
- Lead Author – "The Effect of Acrylate Functionality on Frontal Polymerization Velocity and Temperature," *Journal of Polymer Science Part A: Polymer Chemistry* (March 2019)

Education

- NRC RAP Postdoctoral Fellow, Naval Research Laboratory Stennis Space Center, 2021 – 2024

- Louisiana State University, Ph.D. in Chemistry, 2020
  - EDA Fellowship
- University of West Florida, B.S. Biochemistry, 2014
  - Award for Scholarly and Creative Works, UWF Student Scholar Symposium

** Baker Donelson professional not admitted to the practice of law.*