***DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE***
***SEMINAR SERIES***
***FALL 2021***

**DATE: WEDNESDAY, NOVEMBER 17, 2021**

**TIME: 1:00PM**

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## GUEST SPEAKER

Dr. Isiah Warner
Professor of Chemistry
Louisiana State University
Baton Rouge, LA

## TOPIC

Materials Approach to Analytical Chemistry

## ABSTRACT

My research group has been exploring the analytical applications of room-temperature ionic liquids (RTILs) for several years. More recently, we have extended the range of these materials to include analytical applications of similar solid materials, i.e. organic salts with melting points of solid ionic liquids (25 °C to 100 °C) up to melting points of 250 °C. To contrast these new materials with RTILs, we have created the acronym, GUMBOS (***G***roup of ***U***niform ***M***aterials ***B***ased on ***O***rganic ***S***alts). These GUMBOS have the tunable properties frequently associated with RTILs, including tunable solubility, melting point, viscosity, thermal stability, and functionality. Thus, when taken in aggregate, these properties allow production of solid phase materials that have a wide range of applications in measurement science. In this talk, I will highlight the applications of GUMBOS that we have recently explored for measurement science, including GUMBOS as sensors, imaging agents, stimuli-responsive materials, and for production of nanoGUMBOS. In regard to nanoGUMBOS, we believe that our methodology represents an extremely useful approach to production of nanomaterials since our materials are designed and assembled for specific uses, rather than adapted for use as is done for many nanomaterials. For example, we have recently developed a novel QCM sensor for measurement of volatile organic compounds with simultaneous molecular weight determination.

## BIO

Dr. Isiah Warner is Vice President for Strategic Initiatives, Philip W. West Professor of Chemistry, and a Boyd Professor of the Louisiana State University system. He has more than 370 refereed publications in a variety of journals relevant to the general areas of analytical and materials chemistry. His particular expertise is in the area of fluorescence spectroscopy, where his research has focused for more than 40 years. Over the past 20 years, he has also maintained a strong research effort in the areas of organized media, separation science, and more recently in the area of ionic liquid chemistry, particularly as applied to solid phase materials for applications

in materials science and nanomaterials. He has also conducted educational research that focuses on mechanisms for maintaining and enhancing student education in science, technology, engineering, and mathematics (STEM), with a particular emphasis on encouraging under-represented students (women and minorities) to pursue terminal degrees in STEM. Through his leadership and mentorship, the LSU Department of Chemistry has become the leading producer of doctoral degrees in chemistry for African Americans in the U.S. and also lead in the percentage of women who receive PhDs. Under his direction, the LSU Office of Strategic Initiatives has mentored countless numbers of students across ten programs from the high school to doctoral levels. Dr. Warner has been recognized as 2016 SEC Professor of the Year, member of the American Academy of Arts and Sciences (2016), Fellow of the National Academy of Inventors (2017), Fellow of the Royal Society of Chemistry (2017), and Nature Mentor of the Year (2019). In the past, he has also received the Presidential Award (President Clinton) for Excellence in Science, Mathematics and Engineering Mentoring and the American Chemical Society Award for Encouraging Disadvantages Students into the Sciences. He has chaired sixty-nine doctoral theses and is currently supervising his final PhD student. More than half of his doctoral students are women and

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