



Richa Chandra, Dr.

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Date Friday, September 27, 2024

Time 12:00 to 1:00 PM

Location SEC 201

“Oxidation Effects on Lipoproteins Measured by Dynamic Light Scattering”

Abstract: Cardiovascular disease (CVD) is the leading cause of mortality, surpassing cancer. Every 34 seconds, one person dies in the United States from cardiovascular disease. The early detection and prevention of CVD are critical, especially considering its comorbidities with emerging infectious diseases. Lipoproteins in the blood, mainly low-density lipoprotein (LDL), are central to CVD development due to their role in cholesterol transport and the potential for oxidative modification, which can lead to atherosclerosis. This project explores the application of dynamic light scattering (DLS) to assess the oxidative modification of lipoproteins, specifically HDL, LDL, and VLDL. We investigate two nonenzymatic pathways: hydrogen peroxide-induced peroxidation and a nitration reaction involving hypochlorous acid and nitrite ion to generate nitryl chloride, a potent oxidizing agent. Our findings demonstrate the potential of DLS as a novel method for characterizing changes in size distributions due to oxidative damage to lipoproteins, offering a promising tool for deepening our understanding of CVD pathogenesis and early CVD risk assessment.

Dr. Richa Chandra is a tenured associate professor and endowed chair for research at the University of St. Thomas in Houston, Texas. She developed a novel bioanalytical methodology to study the progression of lipoproteins related to cardiovascular disease. She has a B.A. in Chemistry, a B.A. in Spanish from Austin College, and a Ph.D. in Bioanalytical Chemistry from Texas A&M University. She also completed a Postdoctoral Appointment at Texas Tech University, where her research led to two publications with Nobel Laureate chemist Dr. Brian Kobilka. In education, she practices an interactive approach to lectures, involving technology and guided inquiry as mainstays of her teaching style. In addition, she works as an education technology consultant for STEAM on Demand. She holds several other appointments, including Director of the Minorities in Science and Engineering Improvement Program and Health Professions Advisor. Outside her academic commitments, Dr. Chandra is the Chair-Elect of the American Chemical Society Greater Houston Section and will move into the Chair position in January 2025. She also co-hosts a podcast advocating for women in STEM fields called *WISEcast*. Dr. Chandra enjoys running, watching suspense dramas, and reading books in her spare time. She cherishes quality moments with her family, including her husband, 11-year-old daughter, 7-year-old son, and two cats.