

Dr. Paresh C. Ray

Department of Chemistry and Biochemistry, Associate Professor

Jackson State University

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Nanoscopic Optical Ruler Beyond FRET Distance Limit: Fundamentals & Applications

Förster resonance energy transfer (FRET) based spectroscopy ruler served as key tool for understanding chemical and biochemical processes, for last several decades. Since FRET process originates from dipole-dipole interactions, the length scale of a FRET ruler is limited to 10 nm maximum. Recently, we and other groups have demonstrated the development of nanomaterial based long-range optical ruler, where one can overcome FRET optical ruler distance dependence limit. During my lecture, we will discuss the basic concept and unique light-focusing properties of plasmonic nanoparticles that are useful to develop a long range optical ruler. We will also discuss the applications of the long range ruler for monitoring biological & chemical processes.



Department Contact Information

Dr. Dhiraj Sardar Dhiraj.sardar@utsa.edu

Christella Robledo Christella.Robledo@utsa.edu

<http://physics.utsa.edu>