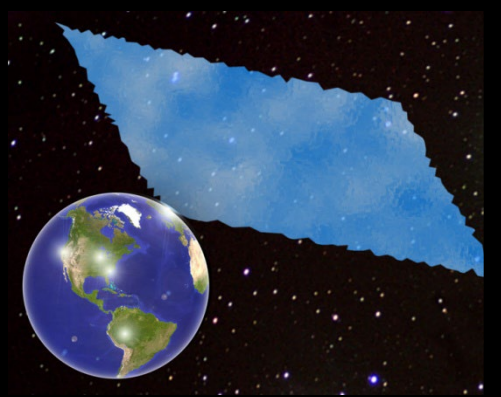
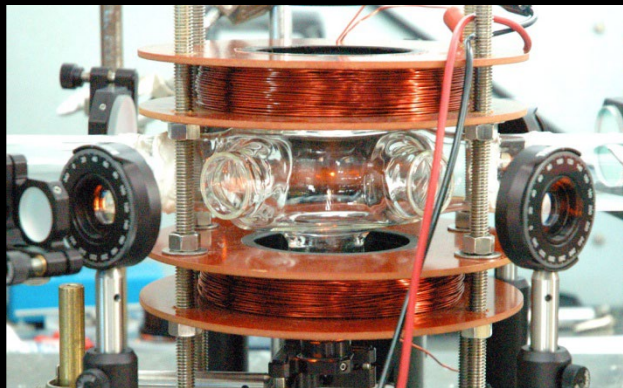




SPITZER MEMORIAL LECTURE SERIES IN PHYSICS

PHYSICS IN ACTION!

Time-Domain Terahertz Spectroscopy of Graphene/Gold Nanoparticle Thin Films Spenser Farrell, Cal State East Bay

Much of materials research is concerned with the design and discovery of materials with desirable optical and electronic properties. This pursuit has historically consisted of altering a material's chemical composition, such as with dopants or alloys, etc. However, advances in nanofabrication have expanded the development space to include nanoscopic geometries as a means of altering a material's behavior. The utilization of nanostructure introduces additional design parameters and sharpens our control over a material's optical and electronic properties. Improvements in property control could contribute to ongoing advances in the design of faster, more energy-efficient computing hardware, more sensitive measurement devices, more efficient energy conversion and storage, quantum technologies, and more. This exploratory work investigates the reciprocal relationship between material composition and nanoscale geometry, and how the interplay between these material features can be tuned to control the material's optical and electrical properties. This interplay will be investigated through the spectroscopic characterization of thin films consisting of gold-nanoparticles trapped within graphene oxide at various proportions— 0%, 8%, 16%, and 100% graphene oxide—which has been shown to affect the packing of the nanoparticles in space. Each sample's optical and electronic properties were determined via time-domain terahertz spectroscopy. With this, we will demonstrate the effects of composition and nanoscale geometry on these properties.

FRIDAY SEPTEMBER 4 12:00 noon – 1:00 pm,

Braddock Center 280 and on Zoom

(<https://csueb.zoom.us/j/87662952495?pwd=cDLfMOqgPCy8DhV3qzTUoS1MDQziWo.1>)