

MRSEC SEMINAR SERIES

Optical Properties of CVD-grown Graphene

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Abstract:

A single sheet of sp^2 -hybridized carbon atoms, called *graphene*, is presently the most widely studied material in the scientific community. Following a brief introduction of graphene and its unique properties, I will present two popular methods for preparing graphene for spectroscopic studies. In carbon science, spectroscopy has played a significant role in unraveling several fundamental properties of nanostructured carbons like fullerenes and carbon nanotubes. Drawing from such spectroscopic studies, the effective roles of Raman and UV-vis spectroscopy in elucidating the *vibration* and *electronic* properties of graphene will be discussed. Specifically, the effects of crystallite size (L_a) on the linear and non-linear optical properties of chemical vapor deposition grown polycrystalline graphene will be presented. In comparison to epitaxial graphene layers grown on SiC wafers which exhibit a photogenerated carrier lifetime of few picoseconds, we find that the photogenerated carriers in our CVD-grown graphene can exhibit lifetimes as long as nanoseconds. Time permitting, preliminary data on doped graphene will also be discussed.
