

Raman Scattering Studies of Various Condensed Matter Systems

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Optical spectroscopic techniques such as Fourier Transform InfraRed (FTIR), ellipsometry, or Raman scattering spectroscopy are applied to diverse areas such as astronomical observation, characteristics of semiconductor device materials, monitoring phase transition behavior, quantum effects in low-dimensional materials, etc, and give us important scientific information. These techniques are still widely used in various disciplines including academia and industries despite the fact that they are rather old techniques that has been developed for about 100 years. In this presentation, basics of several optical spectroscopies, especially Raman scattering spectroscopy will be briefly reviewed and spectroscopic research activities in condensed matter systems including various oxides, semiconductor device materials, thin films for solar cells, low dimensional nanostructured materials, etc. will be introduced. Recent application of Raman scattering to nanometer-scale spectroscopy, i.e., SERS (surface enhanced Raman scattering) and TERS (tip enhanced Raman scattering) will be briefly introduced as well.