

Raman instrument and applications

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Abstract

When light interacts with molecules in a gas, liquid, or solid, the majority of the photons are scattered at the same energy as the incident photons. This is known as elastic scattering or Rayleigh scattering. A small number of these photons, approximately 1 photon in 10 million will scatter at a different frequency than the incident photon. This phenomenon is called inelastic scattering, or the Raman effect. This shift in energy enables us to probe the chemical structure of a material and provides information about chemical structure and identity by monitoring a distinct chemical fingerprint for a particular molecule or material.

The current talk will introduce the fundamentals of Raman effect and explore the instrumentation of Raman spectroscopy; components and operational concepts. Further, we will briefly review the application of Raman instruments.