Raman spectroscopy: Alternate method for strain and carbon substitution study in MgB2.

Abstract

In the present work, Raman spectroscopy is employed to study the strain and carbon substitution effect of SiC doped polycrystalline MgB2. We demonstrated that Raman spectroscopy analysis is more accurate to estimate the carbon substitution compared to the X-ray diffraction analysis. Raman result showed that lattice shrinkage cannot account alone for carbon incorporation where high level of lattice distortion is attributing to both C substitution and lattice strain effect. Our result provides alternative explanation for lattice variation in the non-carbon doped MgB2 which is basically due to lattice strain.

Keyword: MgB2; Carbon doping; Non-uniform strain; Raman spectroscopy.