Visible light emission from porous silicon carbide

Light-emitting silicon carbide is emerging as an environment-friendly wavelength converter in the application of light-emitting diode based white light source for two main reasons. Firstly, SiC has very good thermal conductivity and therefore a good substrate for GaN growth in addition to the small lattice mismatch. Secondly, SiC material is abundant, containing no rear-earth element material as commercial phosphor. In this paper, fabrication of porous SiC is introduced, and their morphology and photoluminescence are characterized. Additionally, the carrier lifetime of the porous SiC is measured by time-resolved photoluminescence. The ultrashort lifetime in the order of ~70ps indicates porous SiC is very promising for the application in the ultrafast visible light communications.