

Fabrication and surface passivation of porous 6H-SiC by atomic layer deposited films - DTU Orbit (08/11/2017)

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Porous 6H-SiC samples with different thicknesses were fabricated through anodic etching in diluted hydrofluoric acid. Scanning electron microscope images show that the dendritic pore formation in 6H-SiC is anisotropic, which has different lateral and vertical formation rates. Strong photoluminescence was observed and the etching process was optimized in terms of etching time and thickness. Enormous enhancement as well as redshift and broadening of photoluminescence spectra were observed after the passivation by atomic layer deposited Al₂O₃ and TiO₂ films. No obvious luminescence was observed above the 6H-SiC crystal band gap, which suggests that the strong photoluminescence is ascribed to surface state produced during the anodic etching.

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