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Strong 380 nm ultraviolet photoluminescence from SiOx (x<2) film prepared by PECVD

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Various research activities on ultraviolet photoluminescence from Si nanocrystals have been studied,[1,2] due to their optical device applications such as improving laser printing speed and light recording density. we fabricated silicon oxide films prepared by plasma enhanced chemical vapor deposition. The helium-diluted 5 % SiH_4 and N_2O gases are used as reactant gas. The substrate is p-type (100) silicon wafer with a resistivity of 0.02 Ωcm. The substrate temperature and plasma power are 350℃, 20W respectively. After the deposition process, the SiOx (x<2) films were annealed in nitrogen ambient using a horizontal furnace for various temperature. The surface structure is examined by Fourier transform Infrared spectroscope (FT-IR) and x-ray photoelectron spectroscopy (XPS) analysis and the optical property is measured by photoluminescence (PL).

[Reference]

1. L. Skuja, J. Non-Cryst. Solids **239**, 16 (1998).
2. B. Poumellec and F. Kherbouche, J. Phys. III **6**, 1595 (1996).