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Plasma deposition of amorphous silicon carbide thin films irradiated with neutrons J. HURAN, P. BOHACEK, M. KUCERA, IEE SAS, Bratislava, Slovakia, A. KLEINOVA, Polymer Institute, SAS, Bratislava, Slovakia, V. SASINKOVA, Institute of Chemistry, SAS, Bratislava, Slovakia, IEE SAS, BRATISLAVA, SLOVAKIA TEAM, POLYMER INSTITUTE, SAS, BRATISLAVA, SLOVAKIA TEAM, INSTITUTE OF CHEMISTRY, SAS, BRATISLAVA, SLOVAKIA TEAM — Amorphous silicon carbide and N-doped silicon carbide thin films were deposited on P-type Si(100) wafer by plasma enhanced chemical vapor deposition (PECVD) technology using silane, methane, ammonium and argon gases. The concentration of elements in the films was determined by RBS and ERDA method. Chemical compositions were analyzed by FTIR spectroscopy. Photoluminescence properties were studied by photoluminescence spectroscopy (PL). Irradiation of samples with various neutron fluencies was performed at room temperature. The films contain silicon, carbon, hydrogen, nitrogen and small amount of oxygen. From the IR spectra, the films contained Si-C, Si-H, C-H, Si-N, N-H and Si-O bonds. No significance effect on the IR spectra after neutron irradiation was observed. PL spectroscopy results of films showed decreasing PL intensity after neutron irradiation and PL intensity decreased with increased neutron fluencies. The measured current of the prepared structures increased after irradiation with neutrons and rise up with neutron fluencies.

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