

Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Silicon carbon nitrid thin films prepared by PECVD technology¹

JOZEF HURAN, PAVOL BOHÁČEK, VALERY N. SHVETSOV, Inst. of Electrical Engineering, Slovak Academy of Sciences, Slovakia, ALEXANDER P. KOBZEV, Joint Institute for Nuclear Research, 141980 Dubna, Russian Federation, ALBIN VALOVIČ, Inst. of Electrical Engineering, Slovak Academy of Sciences, Slovakia — The deposition of silicon carbon nitride has been widely studied due to their attractive properties, such as wear resistance, chemically inertness and wide band gap, which provide optical, electronic and other applications. Silicon carbon nitride films were grown by the plasma enhanced chemical vapour deposition (PECVD) technique. The flow rates of SiH_4 , CH_4 and NH_3 gases were 10 sccm, 30 sccm and 15 sccm, respectively. The deposition temperatures were 350, 400 and 450 °C respectively. The concentration of species in the SiCN films was determined by Rutherford backscattering spectrometry (RBS). Chemical compositions were analyzed by infrared spectroscopy. The hydrogen concentration was determined by the elastic recoil detection (ERD) method. Irradiation of samples by fast neutrons in IREN accelerator at JINR Dubna was used for radiation hardness investigation. Photoluminescence spectra were measured at 6 K and 300 K. The electrical properties of SiCN films were determined by I-V and C-V measurement. The properties of SiCN films are discussed on the base of the obtained results.

¹This research has been supported by the Slovak Research and Development Agency under the contracts APVV-0713-07 and by the Scientific Grant Agency of the Ministry of Education of the Slovakia and Slovak Academy of Sciences, No. 2/0192/10.

Jozef Huran
Institute of Electrical Engineering, Slovak Academy of Sciences,
Dúbravská cesta 9, Bratislava, 841 04, Slovakia

Date submitted: 16 Jun 2010

Electronic form version 1.4