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Blister formation in ZrN/SiN multilayers after He irradiation

V.V. Uglov^{1,2,3,*}, G. Abadias⁴, S.V. Zlotski¹, N.T. Kvasov^{1,2}, I.A. Saladukhin¹,

A. A. Malashevich¹

¹*Belarusian State University, 220030 Minsk, Belarus*

²*Tomsk Polytechnic University, 634050 Tomsk, Russia*

³*National Research Nuclear University “MEPhI” (Moscow Engineering Physics Institute),
115409, Moscow, Russia*

⁴*Institut Pprime, CNRS, Université de Poitiers, ISAE-ENSMA, 86962 Futuroscope-
Chasseneuil, France*

*Corresponding author: Uglov Vladimir

Belarusian State University, 4 Nezavisimosti av., 220030 Minsk, Belarus. Tel.: +375 17
2095134; fax: +375 17 2095445. E-mail: uglov@bsu.by

Abstract

The work is dedicated to the investigation of blister formation in ZrN/SiN_x multilayer films irradiated with He ions (30 keV) and annealed in a vacuum at 600°C. Multilayer films were prepared by reactive magnetron sputter-deposition on Si wafers under Ar + N₂ plasma discharges. ZrN/SiN_x films were deposited by sequential sputtering from elemental Zr and Si₃N₄ targets at substrate temperature of 300°C, with ZrN and SiN_x layer thickness varying from 2 to 10 nm. According to transmission electron microscopy (TEM), the multilayer films consist of nanocrystalline (002)-oriented ZrN and amorphous SiN_x layers. Surface morphology changes of ZrN/SiN_x films irradiated with He ions (30 keV) and annealed in a

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