FORMATION OF Si_3N_4 BURIED LAYERS
IN SILICON UNDER THE ACTION
OF HYDROSTATIC PRESSURE

V. Melnik, A. Misiuk[1], *V. Popov, O. Oberemok,*
B. Romanyuk, D. Gamov, P. Formanek[2]

V.E. Lashkar'ov Institute of Semiconductor Physics,
Nat. Acad. Sci. of Ukraine
(*41, Nauky Prosp., Kyiv 03028, Ukraine;*
e-mail: romb@isp.kiev.ua),
[1]Institute of Electron Technology
(*Al. Lotnikow 32/46, 02-668, Warsaw, Poland;*
e-mail: misiuk@ite.waw.pl),
[2]IHP
(*Im Technologiepark 25, 15236 Frankfurt (Oder), Germany*)

S u m m a r y

The methods of secondary-ion mass spectroscopy and transmission electron microscopy are used for the investigation of the influence of the hydrostatic pressure (HP) of nitrogen under high-temperature annealing on the synthesis of Si_3N_4 buried layers in silicon after the ion implantation of nitrogen. It is shown that the action of HP at a temperature of 1130°C stimulates the formation of a stoichiometric Si_3N_4 layer with abrupt phase interfaces and the high-level crystal perfection of surface layers of silicon. The creation of such structures can be related to the generation of interstitial defects and their influence on the formation of Si_3N_4 phase under the action of HP.