

EFFECT OF THE DEPOSITION TECHNOLOGY
AND STRUCTURE OF ZnO FILMS ON THEIR
PHOTO- AND CATHODOLUMINESCENCE

*G.V. Lashkarev, V.I. Lazorenko, A.I. Evtushenko,
V.D. Khranovskyy, I.V. Blonskyy¹,
I.M. Dmitruk¹, T.Sh. Osmanov*

Institute for Problems of Material Science,
Nat. Acad. of Sci. of Ukraine
(3, Krzhyzhanovskogo Str., Kyiv 03180;
e-mail: gvl35@ipms.kiev.ua),
¹Institute of Physics, Nat. Acad. of Sci. of Ukraine
(46, Nauky Prosp., Kyiv 03650;
e-mail: blon@iop.kiev.ua)

S u m m a r y

The photoluminescence (PL) of ZnO films deposited on Si and SiC substrates using the PEMOCVD method is investigated under various technological conditions. The most intense ultraviolet (UV) PL is observed for the zinc oxide films grown on Si with the use of a SiN_x:H buffer layer at a temperature of 350 °C. It is assumed that the intensity of “green” luminescence decreases due to the diffusion of hydrogen into the ZnO film. The thickness uniformity of the optical properties of the films is estimated with the help of the cathodoluminescence (CL) method which is important for the creation of UV light-emitting devices on the basis of ZnO. An ultralinear behavior of the integral CL intensity as a function of the excitation power was observed.