

The use of laser technology at the Alecu Russo State University of Balti

Pavel Topala

State University of Balti, Republic of Moldova

The research on developing technologies on the base of light flow actions generated by laser is realized at the Alecu Russo State University of Balti during a period of about 20 years. In order to achieve these technologies, the research on secondary radiation in filter glass bodies under the action of air plasma formed by applying pulsed electrical discharge machining is performed. Thus, the possibility of obtaining secondary radiation in infrared, green, ultraviolet, etc. using the glass filters as a radiating body was experimentally demonstrated.

An excimer laser was conceived, designed and developed by the collaborators of laboratory of Laser Technologies from the Alecu Russo State University of Balti. The parameters of the developed XeCl excimer laser are: the wave length $\lambda=308$ nm; the impulse duration $\tau=15$ ns; the maximal impulse energy $E_{\max}=0.01$ J; the repetition frequency $f=1\div 30$ pps; the technological chamber - thermostat with $50\div 500$ °C, vacuum.

The action of UV laser light radiation and electrical discharges in impulse plasma is applied to the synthesis of ZnO semiconductor structures (nanometric films and particles). For this purpose, the experimental setup has been designed and developed which scheme is shown in Fig. 1.

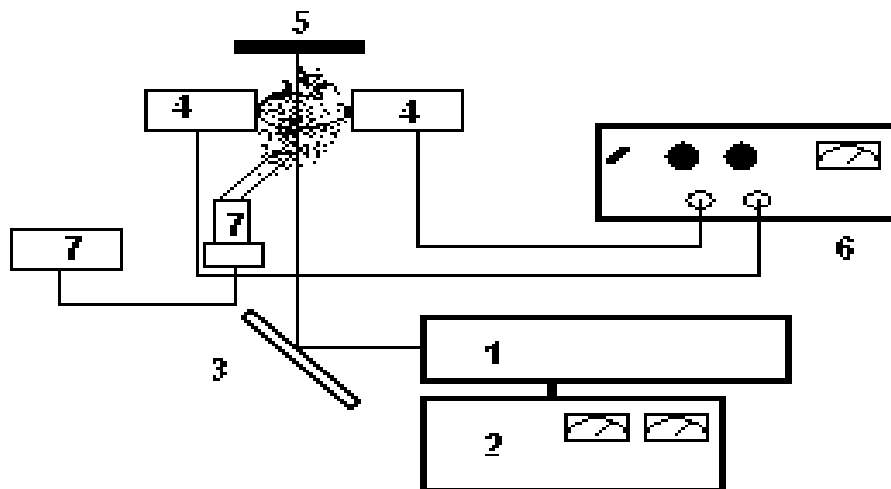


Fig.1. Technological experimental setup for the synthesis of ZnO semiconductor structures by the action of UV laser light radiation and electrical discharges in impulse plasma: 1- XeCl excimer laser ($\lambda=308$ nm); 2 – power supply; 3 – plan reflector; 4 – electrodes of Zn, graphite; 5 – support - Si; 6 – block of producing electrical discharges in impulse; 7 – ultrasonic dispersion device