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Acoustic emission of structures basis on the A3B5 compounds

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Failure of internal mechanical pressure at origin and movement of dislocations in processes of fast degradation and defect formation in LED and semiconductor lasers lead to occurrence of acoustic emission (AE) - to the phenomenon of radiation of pulse spontaneous acoustic wave's noise character. This failure of internal mechanical pressure in local volumes with occurrence AE is possible only at action of external fields (influences) of the certain physical nature, in our case - non-uniform fields of the thermomechanical pressure created by a constant direct current. In work were investigated n+-n-p- structures basis on the GaP:N, GaP_{0,85}As_{0,15}:N, Zn-O, InGaN/GaN and p+-p-n- structures basis on the Ga_{0,7}Al_{0,3}As and Ga_{0,65}Al_{0,35}As. During step-by-step increase of a current 10-25 multiple change of AE occurrence threshold and a destruction threshold of structures was revealed at natural ageing structures after 6-108 s. For some samples of structures at low temperatures (77) AE occurrence threshold came nearer or even corresponded to a destruction threshold. The given effect explains gradual saturation of dislocations by atoms of impurity with formation of Cottrell cloud, that considerably lowers their mobility and increases activation energy and accordingly a AE occurrence threshold