RADIATIVE EMISSION PROPERTIES OF a-SiN:H BASED NANOMETRIC MULTILAYERS FOR LIGHT EMITTING DEVICES

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Optical and photoluminescence characterizations were performed on nanometric multilayer structures based on amorphous silicon nitrogen alloys. Evidences are shown that the radiative efficiency of multilayers increases with respect to single layer structures. This is ascribed to a strong electron-hole pair localization and a low heterointerfaces defect density. Time resolved photoluminescence measurements yield fast recombination with an energy dependent lifetime due to hopping processes. Finally, the performance of an electroluminescent device based on multilayers are presented.

Keywords: amorphous silicon based alloys, multilayers, photoluminescence, electroluminescence.

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