

LUMINESCENCE OF α - AND β -BaB₂O₄ SINGLE CRYSTALS

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S u m m a r y

For α - and β -BaB₂O₄ single crystals (ABO and BBO) synthesized from identical chemical compounds, X-ray luminescence (XL), thermoluminescence (TL), photoluminescence (PL), and photoluminescence excitation (PLE) spectra were measured at 77 - 400 K. The essential differences between luminescence spectra of ABO and BBO crystals are explained by the peculiarities of their structure and growth technology. It is established that: 1) XL spectrum of ABO crystals (at 395 nm and 78 K) demonstrates the considerable luminosity which relates to the proper radiation of the matrix; for BBO crystals, XL is weaker and has the extrinsic nature; 2) the main part of the TL luminosity for ABO crystals concentrates in high-temperature peaks (at 333 and 369 K), which are absent for BBO crystals; 3) long-wavelength displacement of the main peaks of PL and PLE for BBO crystals in comparison with ones for ABO crystals is considerably greater and can be explained by the peculiarities of their electronic zone structures.