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Anfiteatro de Física

Quantum structures of ZnMgO/ZnO/ZnMgO
grown by molecular beam epitaxy

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Figure: Left – scheme of a ZnMgO/ZnO/ZnMgO double quantum well structure. Right - spatially resolved cathodoluminescence measured using scanning electron microscope. Analysis of the spatial location of the emission helps to identify its origin.

Resumo: ZnO has many benefits for UV optoelectronic devices because it has a direct band gap of 3.37 eV and a large exciton binding energy ~60 meV. In ZnMgO/ZnO/ZnMgO quantum structures, the exciton binding energy increases up 100 meV due to quantum confinement, making them even more attractive for applications. In this seminar, the results of our studies of single and multiple quantum well structures of ZnMgO/ZnO/ZnMgO grown by MBE on different substrates including sapphire and crystalline ZnO will be presented. Optical properties of asymmetric coupled quantum wells grown on polar and non-polar ZnO and on sapphire will be discussed. In particular, the influence of interwell coupling on the excitonic emission will be shown.