Abstract Submitted
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Optical and structural characterization of yttrium calcium borate glasses[1] CRISTIANE SANTOS, DOMINGOS D.S. MENESES, PATRICK ECHEGUT, CEMHTI-CNRS, Orléans, France, DANIEL R. NEUVILLE, IPGP-CNRS, Paris, France, ANTONIO C. HERNANDES, IFSC-Universidade de São Paulo, São Carlos, Brazil, ALAIN IBANEZ, Institut Néel-CNRS, Grenoble, France — Structural and optical properties of new stable glasses in the Y_2O_3 – CaO – B_2O_3 system, containing the same Y/Ca ratio as the $YCa_4O(BO_3)_3$ (YCOB) crystal, were determined from Raman and reflectance infrared spectroscopy [1]. We have obtained the optical functions using a dielectric function model and their evolution with composition are associated with an increase in the number of non-bridging oxygen and to calcium/yttrium oxides content with the formation of pentaborate, metaborate, orthoborate and pyroborate groups. The orthoborate and pyroborate signatures increase with increasing the modifier cations. Refractive indexes values (from 1.597 to 1.627 at $\lambda = 2$ μm) are in good agreement with those of the YCOB crystal, an indication that these glasses are potential candidates for doping with rare-earth ions for optical applications.

[1] C. N. Santos, D.D.S. Meneses, P. Echegut, D. R. Neuville, A. C. Hernandes, A. Ibanez, Appl. Phys. Lett. **94**, 151901(2009).

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