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A Study on Nucleation, Crystallization Kinetics, Microstructure and Mechanical Properties of Ru-Bi Partial Substituted BSCCO Glass Ceramics AHMET TOLGA TASCI, OZGUR OZTURK, TUGBA GOKCEN, Kastamonu University, SUKRU CAVDAR, HALUK KORALAY, Gazi University, ABDULKADIR SENOL, Kastamonu University — This study deals with, the effects of Ru-Bi partial substitutions on the thermal, structural and mechanical properties of $Bi_{1.8-x}Ru_xPb_{0.2}Sr_2CaCu_2O_{10+\delta}$ (x=0.0, 0.025, 0.050, 0.075), produced with glass-ceramics method have been investigated. The effects of Ru-Bi Partial substitutions on glass transition, nucleation and crystallization temperature are analyzed by differential thermal analyzer (DTA). Furthermore, micro-structure and micro-mechanical properties of Ru-Bi partial substituted BSCCO glass ceramics have been investigated by X-ray diffraction (XRD), scanning electron microscopy (SEM) and Vickers microhardness measurements. From the DTA results, nucleation kinetics have been obtained by using Ozawa, Augis-Bennett, Takher and Kissinger equations. Also activation energies and Avrami parameters have been found. Oxidation amount is seen to be increased with increasing Ru concentration in consequence of thermogravimetric analyses results. Moreover, Lattice parameters, volume fractions and surface morphologies of the samples are obtained from XRD and SEM measurements, respectively.

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