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Effect of Li+3 Ion Irradiation on Properties of Ta and Dy Doped Bi1.5Zn0.92Nb1.5O6.92 Pyrochlores BILGEHAN YUMAK, Marmara University Department of Physics, MEHMET YUMAK, AYHAN MERGEN, Marmara University Department of Metallurgical and Materials Eng, ANJUM QURESHI, Faculty of Engineering and Natural Sciences, Sabanci University — Pyrochlore compounds with a general formula of A2B2X7 where A and B are B cations and X is anion exhibit a variety of interesting properties which allow for a broad range of applications, such as high-permittivity dielectrics, as cathode and electrolyte materials in solid electrolytes, host materials for the immobilization of fission products, catalysis, and thermal barrier coatings and fluorescence centers. Pyrochlore oxides can accommodate a wide range of solid solutions between BO2 and A2O3 compounds. Radiation effects in a wide range of pyrochlore compositions have been extensively investigated due to the potential application of pyrochlores. In this study, Ta and Dy-doped Bi1.5Zn0.92Nb1.5O6.92 (BZN) pyrochlore compounds were produced by mixed oxide technique. After determining the solubility limit of Ta and Dy in BZN by XRD, single phase Ta and Dy-doped BZN ceramics were irradiated with different fluences of Li3+ ion irradiation. The microstructures of sintered ceramics before and after irradiation were discovered by scanning electron microscopy. The effect of irradiation on dielectric properites at different frequencies and temperatures were also investigated.

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