

Properties of nanoparticle-fabricated bulk dielectrics / N. Takesue, K. Kiba, K. Asakura (Fukuoka Univ.), J. Saito (JAEA) / We fabricated cuboid nanoparticles of barium titanate by hydrothermal synthesis. Each particle is the single crystal and has the well-known conventional crystal structure, which was confirmed by TEM and X-ray diffraction. Currently, we are trying to build the oriented dense assemblage by stirring the particles in a small container. The result will be presented.

Experimental study of perovskite BNT-base ferroelectric solid solutions / K. Asakura, K. Kiba (Fukuoka Univ.), J. Saito (JAEA), N. Takesue (Fukuoka Univ.) / We fabricated perovskite ABO_3 ferroelectric solid-solution systems of a bismuth-sodium titanate base; the fabrications were done by flux powder sintering. Crystal structures of the samples were investigated by X-ray diffraction; (111) and (200) Bragg reflections of the typical primitive cell were monitored carefully. The results of, e.g. $(Bi_{1/2}Na_{1/2})TiO_3$ - $BaTiO_3$, show a possible morphotropic feature over phase states of both tetragonal and rhombohedral structures. We expect that this system will be the fundamental system for excellent piezoelectric properties. The results including measurements of dielectricity will be presented systematically, also for other systems.

Experimental study of perovskite BT-BZ base ferroelectric solid solutions / K. Kiba, K. Asakura (Fukuoka Univ.), J. Saito (JAEA), N. Takesue (Fukuoka Univ.) / We fabricated perovskite ABO_3 ferroelectric solid-solution systems of a barium-titanate-zirconate base; the fabrications were done by powder sintering. Crystal structures of the samples were investigated by X-ray diffraction; (111) and (200) Bragg reflections of the typical primitive cell were monitored carefully. The results of, e.g. $BaZrO_3$ - $BiFeO_3$, show that their solid solution is formed somehow. We expect that this system will be the fundamental system for excellent piezoelectric properties. The results including measurements of dielectricity will be presented systematically, also for other systems.

The Ceramic Society of Japan The 31st Fall Meeting September 5-7, 2018. Registered.