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Hybrid Improper Ferroelectricity S.-W. CHEONG, YOON SEOK OH, Rutgers University, XUAN LUO, Pohang University of Science and Technology, FEI-TING HUANG, YAZHONG WANG, Rutgers University — Utilizing trilinear coupling of two types of octahedron rotations, hybrid improper ferroelectricity has been theoretically predicted in double layered compounds such as $(\text{Ca,Sr,Ba})_3(\text{Mn,Ti,Sn,Zr,Ge})_2\text{O}_7$. On the other hand, there exists little theoretical prediction on practical properties of the potentially-ferroelectric compounds such as ferroelectric transition temperature, switchability of polarization, and chemical phase stability. We have attempted to fabricate single crystals of some of these compounds, and examined the physical properties of the crystals with the aim of discovering new bulk ferroelectrics with switchable polarization at room temperature. We will report the results of our comprehensive experimental investigation.

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