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Hybrid Improper Ferroelectricity in Highly Cleavable Single Crystals of Dion-Jacobson-Compound CsBiNb2O7 XIACHEN FANG, RONGWEI HU, YAZHONG WANG, FEITING HUANG, SANG-WOOK CHEONG, Rutgers The State University of New Jersey — Recently, hybrid improper ferroelectrics, a relatively new mechanism leading to ferroelectricity has drawn researchers' interests intensively. Among which, a subfamily of the layered perovskites, Dion-Jacobson (D-J) compounds with general chemical formula $A[A'_{n-1}B_nO_{3n+1}]$ is especially interesting because of its large polarization compared with all the other known hybrid improper ferroelectrics like the double-layered Ruddlesden-Popper perovskites with the chemical formula of $A_3B_2O_7$. We have grown high quality single crystals of Dion-Jacobson compound $CsBiNb_2O_7$ using self-flux method. Strong ferroelectric polarization in $CsBiNb_2O_7$ single crystal as well as its high coercivity has been confirmed and quantified during polarization-electric field measurement. Using Piezoelectric Force Microscopy, we perform a systematic study on the ferroelectric domain structure and dynamics of $CsBiNb_2O_7$. Further study on the high cleavability of Dion-Jacobson compounds indicates that they might be a good candidate to approach 2-D ferroelectric system.

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