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High Temperature Dielectric Behavior of Polycarbonate/Poly(vinylidene fluoride) Multilayer Films CRAIG LEWIS, JUNG-KAI TSENG, MATHEW MACKEY, ERIC BAER, LEI ZHU, Case Western Reserve University, LEI ZHU GROUP TEAM — Because of significant dielectric and resistivity constants for polycarbonate (PC) and poly(vinylidene fluoride) (PVDF), the Maxwell-Wagner-Sillars interfacial polarization is observed in PC/PVDF multilayer films and is able to increase the overall electric displacement. However, based on the dielectric displacement-electric field (D-E) loop study, the PC/PVDF 50/50 32 layer film has higher dielectric constant calculated from the slope of D-E loop as compared to the 256 layer film. In other words, the maximum D decreases with decreasing the PC layer thickness. Since the electron tunneling is significant for thinner PC layers (i.e., internal conduction), the interfacial polarization is decreased. This study elucidates the relationship between the maximum D and the PC layer thickness, as well as the dielectric behavior at high temperatures.

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