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Flame Retardant Homopolymer and Polymer Blend Composites MIRIAM RAFAILOVICH, MAYU SI, JONATHAN SOKOLOV, Department of Materials Science and Engineering, Stony Brook University, Stony Brook, NY 11794, TOHRU ARAKI, HARALD ADE, Department of Physics, University of North Carolina, DANIEL HEFTER, DRS High School, Woodmere, NY, ARYEH SOKOLOV, Queens College, Flushing, NY — We investigated the flame retardant performance of homopolymer, EVA, PMMA, PP, and PS, and polymer blends, PS/PMMA, PC/SAN, with organical and conventional flame retardant agents such as decabromodiphenyl ether (DB) and phosphorus compounds. These materials were characterized by TEM, STXM, LOI and UL 94 V-0. TEM and STXM photographs show that the addition of organoclays into polymer blends drastically slows down the phase separation and accelerates the decompose of bromine compounds during the combustion. Further, UL 94 V-0 results indicate that PS/PMMA blend with DB can not achieve self-extinguishing in the absence of clay. The amounts of flame retardants and clay used were varied to try to achieve the optimal formula to pass UL 94 V-0. The synergism of clay and flame retardant agents were completely studied by various measurements, time dependence burning (TEM, Ion Chromatography), GC-MS, and cone calorimeter.

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