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Bioinspired Non-iridescent Structural Color from Polymer Blend Thin Films ASRITHA NALLAPANENI, MATTHEW SHAWKEY, ALAMGIR KARIM, Univ of Akron — Colors exhibited in biological species are either due to natural pigments, sub-micron structural variation or both. Structural colors thus exhibited can be iridescent (ID) or non-iridescent (NID) in nature. NID colors originate due to interference and coherent scattering of light with quasi-ordered micro- and nano- structures. Specifically, in Eastern Bluebird (Sialia sialis) these nanostructures develop as a result of phase separation of β-keratin from cytoplasm present in cells. We replicate these structures *via* spinodal blend phase separation of PS-PMMA thin films. Colors of films vary from ultraviolet to blue. Scattering of UV-visible light from selectively leeched phase separated blends are studied in terms of varying domain spacing (200nm to 2μm) of film. We control these parameters by tuning annealing time and temperature. Angle-resolved spectroscopy studies suggest that the films are weakly iridescent and scattering from phase-separated films is more diffused when compared to well-mixed films. This study offers solutions to several color-based application in paints and coatings industry.

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