

# Structural Features of Anti-Sagging Solutions Resolved by Light/X-ray Scattering and Microscopy Analyses

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## Abstract

The structural features of a series of model anti-sagging solutions composed of polyester (ETERKYD 50522-R-60) and urea compound are explored using combined light/X-ray scattering analysis and SEM characterization. Two different chemical designs of the urea molecules dispersed in the polymer solution were found to result in distinct local crystalline structures as well as mesoscale aggregate morphologies. The scattering analyses revealed the formation of large aggregate clusters (~3  $\mu\text{m}$ ) in both cases, one bearing a network interior structure and the other consisting of fractal aggregates that are composed of yet smaller packing units (~1.5 nm). The contrasting structural features are in accord with the entwined whisker and mass fractal structures, respectively, revealed by the SEM characterization. The correlation between these multiscale structural features and the corresponding rheological properties which reflect their anti-sagging performance is currently being explored.

**Keywords** – *light/X-ray scattering, fractal aggregate, network structure*