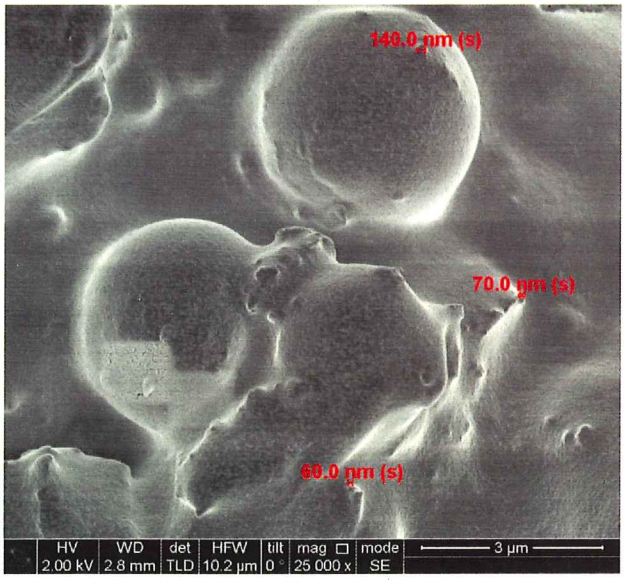
UNIVERSITY OF OREGON

Sample: Toughguard "white polymer"
Analysis Date: 10/16/12
Analysis tool: FEI Helios FIB/SEM

Sample procedures and findings summary:

A droplet of white polymer solution was placed on an aluminum SEM sample stub then plunged into liquid nitrogen. After the droplet was frozen solid, the sample stub was attached to our SEM cold stage and transferred into the SEM airlock (Quorum cryo transfer system). While in the airlock/transfer system, the sample was cleaved with a razor blade to expose a fresh surface, then sputter coated with thin layer of Pd metal to prevent charging artifacts during imaging. After coating, the sample was transferred into the SEM chamber and imaged at 2kV using various magnifications. The sample was observed having several sized features ranging from ~5 micron (larger spheres), to sub-100nm particulates (typically found arranged on the outside of spheres, and randomly on other areas of the exposed frozen-polymer surface). Below are two example images demonstrating the range of measurements.



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