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**Soft X-ray Resonant Scattering of Structured Polymer Nanoparticles** HARALD ADE, T. ARAKI, NCSU, G. MITCHELL, Dow Chemical, J. STUBBS, D. SUNDBERG, U. New Hampshire, J. KORTRIGHT, A.L.D. KILCOYNE, LBNL — We present the development and application of resonant soft x-ray scattering (RXS) to chemically heterogeneous, i.e. structured, soft condensed matter materials. Polymer composite latex particles  $\sim 200$  nm in diameter were utilized to determine the potential utility of this technique. Two styrene-acrylic polymer latex systems were prepared on silicon nitride membranes. Scattering measurements were performed in transmission. Angular scans at photon energies corresponding to strong scattering contrast between specific chemical moieties made it possible to infer the relative effective radii corresponding to the two polymer phases in the structured latex particles. The results show that resonant soft x-ray scattering should be a powerful complementary tool to neutron- and hard x-ray scattering and NEXAFS spectromicroscopy for the characterization of structured soft condensed matter nanomaterials.

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