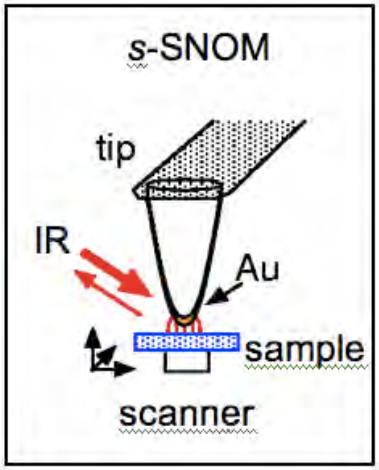
Infrared Chemical Nano-Imaging and Spectroscopy Capability

Capability/Need

- **First** environmental, tunable, infrared scattering-type scanning near-field microscope.
- Significant expansion of EMSL's chemical surface and nanostructure μ-characterization capabilities
- Instrumentation allows for infrared vibrational spectroscopy and imaging with nanometer-scale spatial resolution and molecular chemical specificity.
- Developed in collaboration with the University of Washington (EMSL Scientific Partner Project)



Science/Users

- Provides nanoscale analysis and characterization of bio-membranes, organic photovoltaics, heterogeneous catalysts, biomineralization, fuel cells, etc.
- *In-situ* analysis in ambient and environmental conditions
- Environmental applications including contamination transport and bioremediation
- Provides high spatial resolution molecular information on surfaces

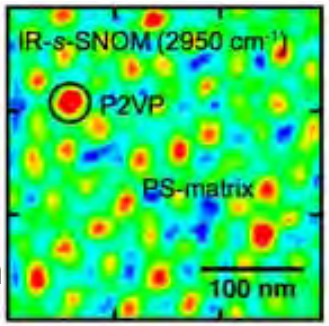


Image of poly(styrene-b-2-vinylpyridine) (P2VP) phase separation in thin film

EMSL Strategy Alignment; Specifics

- Science themes: Science of Interfacial Phenomena; Geochemistry/Biogeochemistry and Subsurface Science; Biological Interactions/Dynamics
- Cross-cutting challenges: Static-Dynamics; Unprecedented Resolution; Design/Syn Complex Materials; Predict Biological Function; Linking Theory/Experiment; Bridging Scales
- EMSL capability area: Microscopy
- Anticipated availability: August 2010
- Technical POCs: Scott Lea –EMSL; Prof. Raschke – University of Washington

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