Analysis of silica-encapsulated biomolecules using Atom Probe Tomography

Proteins are involved in almost all biological activity and more than half of our medicinal drugs today are targeted towards proteins.

Silica encapsulation
By using amorphous silica as a water-replacement matrix, the protein can be embedded with its native structure and functionality preserved.

Reconstruction results
- PDB data
- Our data

Mass spectra from IgG
Spectra from silica glass and clear peaks from IgG spectra shows realized methodology.

Future?
- Develop experimental procedures to get a higher hit rate – surface immobilization, labeled proteins
- Cryo-preparation
- Generic protocol for protein/particle analysis
- Study proteins movement during “glassification”

References