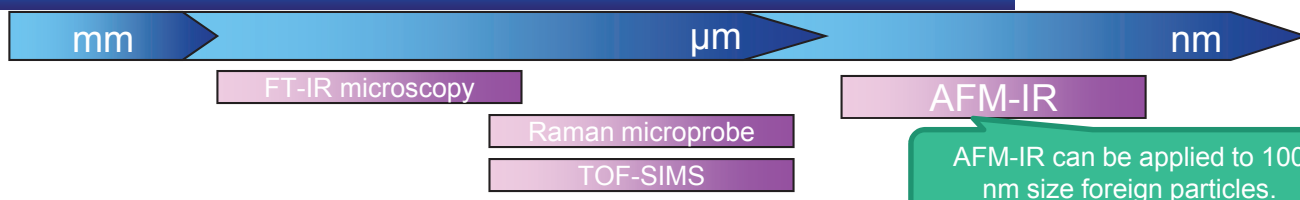


Composition analysis of nanometer size foreign particles

TRC has more than 35 years experience of failure analysis and trouble shooting in many industrial products. Recent development of analytical methods combined with our sophisticated micro-sampling techniques have enabled composition analysis of micro- and nano- size foreign particles and contaminants in such as semiconductors and display devices.

Spatial resolution of analysis methods using for composition analysis

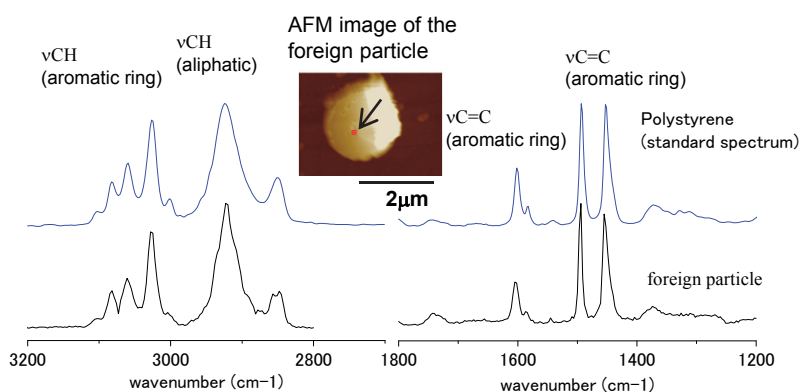


Analytical method	Spatial resolution	Our features
FT-IR microscopy	~10μm	Sophisticated and expertized sampling techniques to identify composition of foreign particles in wide range products. Extensive IR database.
Microscopic Raman	~1μm	Wide range excitation source from NIR ~ VIS ~ UV. Original Raman database.
TOF-SIMS	~1μm	Cutting edge GCIB(Ar Gas Cluster Ion Beam) enables nondestructive depth analysis or cleaning for organic materials.
AFM-IR	~100nm	Our resented introduced facility for composition analysis for nanometer scale region. The most high resolution technique to identify organic materials.

Composition analysis employed with AFM-IR

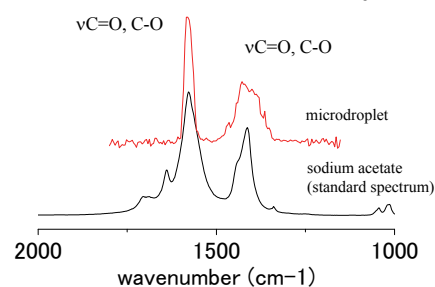
Spherical particles on film surface

✓ The foreign particle is identified to be polystyrene.



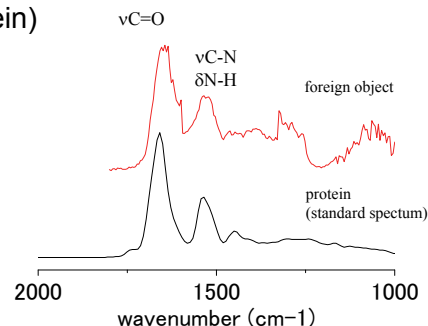
Microdroplet on silicon wafer

✓ The main component is carboxylate.



The foreign object in molding resin

✓ The material is found to be polyamide (protein)



“AFM-IR” combined with our sophisticated micro-sampling techniques provide precise composition of nano-meter size foreign particles in a wide range of industrial products.