

Instrumental analysis for the elimination of foreign substance

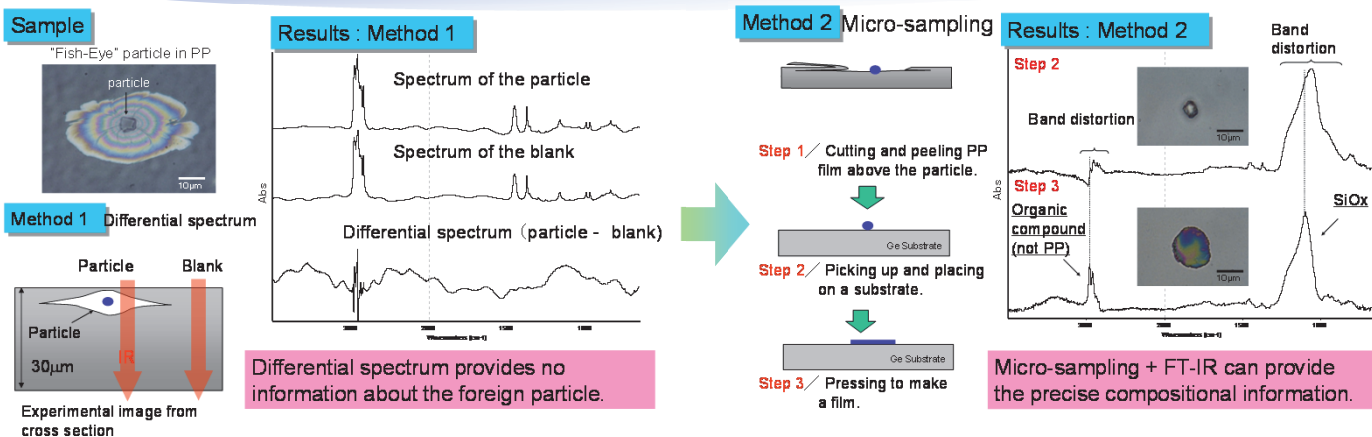
Foreign substances in manufacturing process result in defective product and complains from customers. It is quite important to identify the cause of foreign substance to improve the process. Foreign substances are various in form and composition, from organics, inorganics and their mixture, and possesses different size ranging from several micrometer to millimeter.

In order to obtain precise composition of the foreign substance, we have been developing sample preparation techniques, applying various instrumental apparatus and improving and expanding our original database. Case examples are shown below.

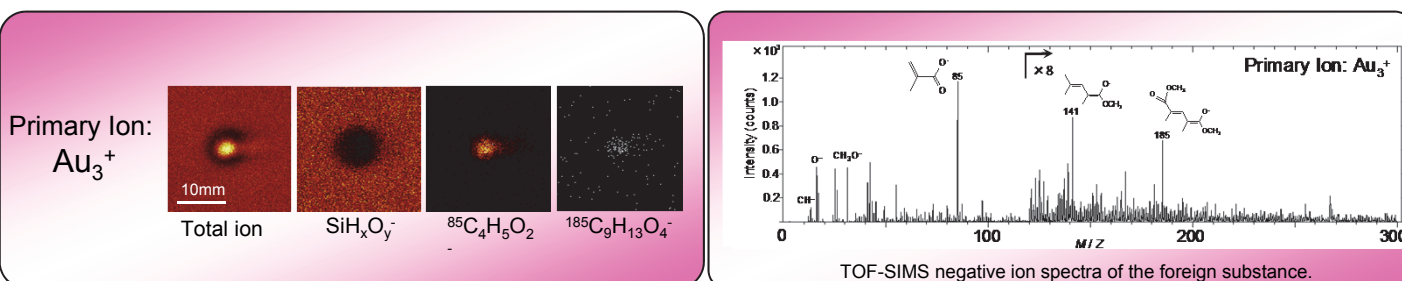
Analytical tools for foreign substance, contamination and impurity

	Analytical method	Characteristics
Organic compound	Micro FT-IR, Raman, TOF-SIMS, XPS	Chemical structure of organic compound (functional groups)
Inorganic compound	SEM-EDX, EPMA, AES, Raman	Elemental and structural information of inorganics

Composition analysis by Micro sampling and micro FT-IR



TOF-SIMS images of Si wafer surface with the foreign substance.



With Au₃⁺ as the primary ion, ⁸⁵C₄H₅O₂⁻, ¹⁴¹C₈H₁₃O₂⁻, ¹⁸⁵C₉H₁₃O₄⁻, ²⁶⁷C₁₃H₁₅O₆⁻ are detected and the foreign substance is identified as polymethyl methacrylate.