Abstract

In March of this year, the incident at the Fukushima Daiichi Nuclear Power Plant in Japan reached its five-year anniversary. Tied with the 1986 events of Chernobyl as one of the worst nuclear disasters to have ever occurred, much is still to be known about the state and environmental behaviour of many of the contributing contaminants. These include the longer-lived, less radioactive, but more chemically toxic species, such as the actinides of uranium, neptunium and plutonium – through which mass-spectrometry methods have highlighted their presence in the vicinity of the plant (as well as much further afield).

With nearly all of the work on the analysis of the radioactive material released from the multiple reactor-building event surrounding the short/medium-lived fission-product isotopes of cesium, this work centres on the analysis of sub-micron uranium particulate. Through the application of a low-vacuum SEM, micromanipulators and specialist electron-beam hardening adhesive, individual suspected fallout particles were identified and subsequently isolated. Their removal facilitates a wide range of characterisation techniques to be performed, including TEM and synchrotron-radiation analysis.

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