DUAL PORT CHAMBER FOR ICP-MS IN RADIONUCLIDE ANALYSIS. **Kayo Yanagisawa**[1,2], Makoto Matsueda[2,3], Makoto Furukawa[2,4] and Yoshitaka Takagai[2] (1) Japan Atomic Energy Agency, Nuclear Science and Engineering Center, Research Group for Nuclear Chemistry, 2-4 Shirakata, Tokai, Ibaraki 319-1195, Japan. (2) Fukushima University, Cluster of Science and Technology, 1 Kanayagawa, Fukushima 960-1296, Japan. (3) Japan Atomic Energy Agency, Collaborative Laboratories for Advanced Decommissioning Science, 10-2 Fukasaku, Miharu, Fukushima 963-7700, Japan. (4) PerkinElmer Japan G.K., 134 Godo, Hodogaya, Yokohama, Kanagawa 240-0005, Japan. (yanagisawa.kayo@jaea.go.jp)

Information on radionuclides derived from inorganic mass spectrometry is valuable for environmental monitoring, radiation dose assessment, nuclear waste management, decommissioning, dating, tracer studies in biology, medicine, and geochemistry. Inductively coupled plasma mass spectrometry (ICP-MS) is a highly sensitive and selective method and has been applied to radionuclide analysis by interfacing with various types of sample introduction techniques (e.g. concentric nebulization, ultrasonic nebulization, hydride generation, laser ablation etc.). Although each technique combined with ICP-MS is now well developed, its practical application in the nuclear field is still evolving. We have recently developed a dual-port cyclonic spray chamber with a concentric nebulizer and gas port. The spray chamber allows simultaneous detection of two different components (e.g. liquid mist and solid aerosol [1]), thus extending the potential of ICP-MS in radionuclide analysis. This presentation shows the application of the spray chamber for direct quantification of radionuclides on solid samples using laser ablation ICP-MS/MS. The difficult-to-measure radionuclide Sr-90 was directly quantified and visualized as a distribution image using online isotope dilution method.

[1] K Yanagisawa, M Matsueda, M Furukawa, H Ishiniwa, T Wada T Hirata, Y Takagai, Analyst 148 (2023) 4291-4299.