

ELEMENTAL ANALYSIS IN YEAST CELLS AND MICROPLASTICS BY ICP-MS WITH AUTOMATED MICRO-FLOW SAMPLE INTRODUCTION. Yan Cheung, Emmett Soffey, and Bastian Georg, Agilent Technologies.

Nanoparticle and Single Cell Elemental Analysis by ICP-MS has become popular in recent years due technological advancements in ICP-MS, as well as increasing needs for applications in various technical areas. On the other hand, microplastics have been the topics of discussions and research as its increasingly important role in environmental applications. Various analytical techniques have their own limitations, such as the ability of particle characterization, particles sizes, and methods of sample introduction. In the current study, an automated, micro-flow autosampler in combination with a triple quadrupole Inductively Coupled Plasma-Mass Spectrometry (ICP-QQQ) is used in the elemental analysis of yeast cells and microplastics. The sample introduction system is designed to deliver intact single cells and microplastics to the plasma, while the ICP-QQQ offers unmatched high sensitivity for elemental determination within the cells and microplastics. Preliminary laboratory experiments in single cell study showed the potential of applying the sample introduction setup to other single cell applications, while the preliminary results from microplastics study showed ICP-QQQ can be good complimentary technique to other analytical techniques for microplastics (such as LDIR). Microplastics with sizes down to 1 micron in aqueous solution were detected and analyzed by ICP-QQQ.