

**November 5, 2015 (13:30–14:30)**



VENDOR SEMINAR:

**Simultaneous On-Line Detection of Si, Ti and Al-Containing Particles in Toothpaste by Asymmetric Flow Field-Flow Fractionation Coupled with ICP-QQQ-MS**

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**Simultaneous On-Line Detection of Si, Ti and Al-Containing Particles in Toothpaste by Asymmetric Flow Field-Flow Fractionation Coupled with ICP-QQQ-MS**

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Toothpaste is a complex mixture of chemicals and includes surfactants, whiteners and abrasives based on nano or micrometer sized  $\text{SiO}_2$ ,  $\text{TiO}_2$  and  $\text{Al}_2\text{O}_3$ . A fraction of toothpaste may be swallowed during its normal use and individuals may therefore be exposed to these metal oxides. The size of the particles is a determining factor for their biological fate and the possible intestinal uptake of these particles. Therefore, in order to characterize these nano or microparticles, a method development project was initiated aiming at simultaneous size separation of all three types of particles by asymmetric flow field-flow fractionation ( $\text{AF}^4$ ). Multi angle light scattering was used for on-line size determination of the eluting particles, and ICP-QQQ-MS was invaluable for selective, simultaneous detection of all three elements under a fixed set of instrumental conditions. In this lecture, results on the  $\text{AF}^4$  and the ICP-QQQ-MS optimization work will be presented along with fractograms of real toothpaste samples using the coupled  $\text{AF}^4$ -ICP-QQQ-MS system.