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CFEL – Building 99, seminar room IV (first floor)

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Mass spectrometric-based techniques to explore the size- and composition-dependent properties of gas-phase clusters

In small clusters, or particles composed of a countable number of atoms, most physical and chemical properties depend strongly on size and composition, typically evolving atom-by-atom towards the bulk phase. For example, the geometries adopted by clusters differ significantly from simply a small piece of bulk material, and the electronic structure is composed of discrete energy levels, instead of electronic bands. Consequently, properties such as chemical reactivity, thermodynamic stability, optical response or magnetism become highly cluster-specific, opening up the possibility of developing novel applications, but challenging the experimental front to study such physical and chemical responses. In this talk, I will discuss a variety of experimental techniques based on mass spectrometry, developed to explore the size- and composition-dependent properties of clusters in the gas-phase, focusing on some specific examples of mono- and bi-metallic clusters.

