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Improving the performance of ICP

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For decades ICP has proven its virtues as a highly effective, reliable and versatile ion source. While other components of the respective combined analytical setup (sample intro systems like LA units or desolvators, collision/reaction cells, detectors etc.) have seen a large number of improvements, the ICP source itself remains largely unchanged.

Why not reconsider the way the ICP source is operated, its layout and interaction with its immediate neighboring components?

In an attempt to do this the processes governing the conversion of sample aerosol into extractable ions are reconsidered and operational parameters and their influences and interactions are reevaluated. The resulting concepts have guided the development of a series of prototypes which have been utilized to further refine the conceptual understanding.

Test data obtained with some of the more operational prototypes showed a reduction in mass bias, which resulted in an intensity increase by a factor of 5 (lighter masses) and 3 (heavier masses). It can be shown that this performance increase can be achieved while the ICP is operated at improved energy efficiency.

While the developmental and testing efforts are ongoing, the presentation will cover the conceptual base and the early results achieved using the developed prototypes.