

**MASS SPECTROMETRY & SPECTROSCOPY**

New Peristaltic Pump for Atomic Spectroscopy Announced

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Since German scientists Robert Bunsen and Gustav Kirchhoff have discovered that the colour of a flame changed once an element was introduced, atomic spectroscopy has developed into one of the most successful analytical methods, which is applied every day worldwide and routinely. Among the different methods in atomic spectroscopy both multielement methods ICP-MS and ICP-OES have been extremely successful for the analysis of liquids. For transport of the liquid sample peristaltic pumps are well established to overcome any change in the composition leading to changes in viscosity thus reducing matrix effects. The material for the elastic tubing can be selected depending on the chemical properties of the analyte solution, so that even strong acids or organic solvents can be transported. However, sometimes signal pulsations are observed with very sensitive devices, so that they need to be reduced by manually optimising the pressure of the pressure plate. Such an optimisation is not required any more for a new generation of pumps. It is based on the 'easy click' principle, where the pressure of the plate is adjusted already by a spring, so that no manual optimisation is needed any more, and the analysis sequence can be started immediately.

In an investigation of the Bundesanstalt für Materialforschung und -prüfung (BAM) in Berlin, Germany, Spetec has tested two different peristaltic pumps and the 'Easy Click' pump operated on a simultaneously measuring ICP-OES instrument, to see whether or not any difference of the analytical figures of merit can be observed (the whole report is available on request). This investigation had demonstrated that all analytical figures of merit including limits of

detection (LOD) and signal stability of in total ten elements (Al, Bi, Co, Cr, Cu, Fe, Mg, Mn, Ni, Se) from a standard solution do not differ significantly for all tested pumps. The resulting LODs measured are in the lower $\mu\text{g/L}$ range and standard deviations of less than 1% for eight and less than 2% for the remaining two elements have been achieved.

As a final result Spetec can say that the 'Easy Click'-pump can compete with the two reference pumps concerning the analytical figures of merit but excels with easy and fast changing of tubing without any further adjustment.

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