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### New column technology enabling ultra-high speed HPLC-MS

The suite of chromatography columns referred to as Active Flow Technology (AFT) form the basis of ultra-high speed HPLC-MS analyses. This technology currently comprises three column designs; Parallel Segmented Flow (PSF); the Curtain Flow (CF) and the Reaction Flow (RF) columns. The key benefits of AFT arise from a new design of the outlet end fitting of the column, which enables the separation of the radial central flow from the wall or peripheral flow. This flow ratio can be adjusted (segmentation ratio), establishing virtual columns of almost limitless internal diameter. The benefits of this design effectively revolve around the establishment of wall-less columns, since they function far more efficiently than conventional HPLC columns, especially at high flow rates. As the radial central flow is separated from the peripheral or wall flow, the amount of mobile phase processed by a detection source is reduced. In fact, the amount of flow entering a detector is proportional to the segmentation ratio. Since these columns yield higher efficiency and a reduction in flow to the detector, separations can be undertaken at flow rates that would otherwise be difficult for an MS to process. We have used these columns at flow rates typically around 5 to 6 mL/min with MS detection, but since the outlet fitting segments the flow, just 1 mL/min has been required to be processed by the detector. This presentation details the design of these columns, their operation and their benefits in HPLC separations that incorporate MS detection.

### Biography

Andrew Shalliker completed his PhD in 1992 from Deakin University, Waurn Ponds and Australia. He completed Postdoctoral studies at Queensland University of Technology, Brisbane (Australia) and the University of Tennessee, Knoxville, the latter under the mentorship of Distinguished Professor Georges Guiochon. He is currently a Professor in Analytical Chemistry at the University of Western Sydney and a Deputy Director of the Australian Centre for Research on Separation Science (ACROSS). He has approximately 130 publications.

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