A Low-Power, Pressure- and Temperature-Programmable Micro Gas Chromatograph Column

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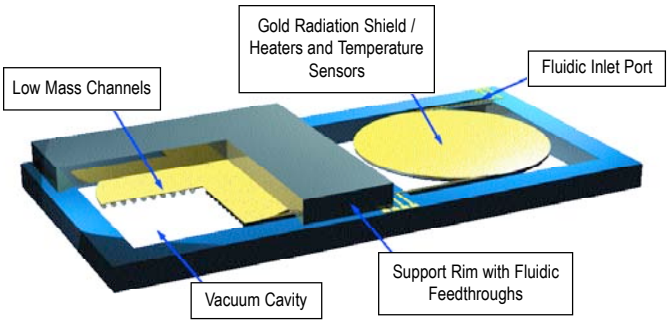
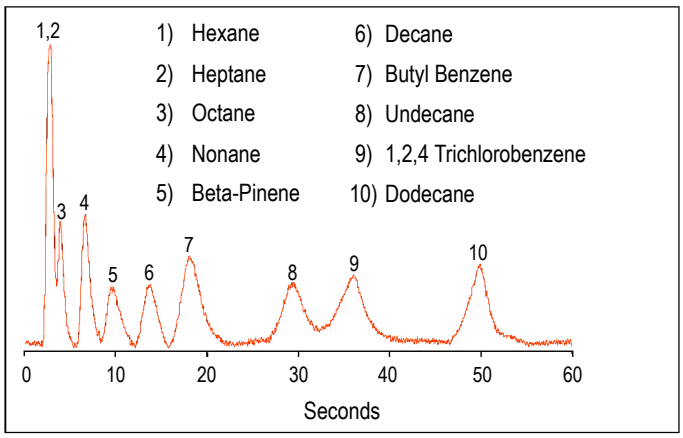
The WIMS Center made a large step towards its 2010 goals with the development of the highest-performance, low-power micro gas chromatography (μGC) column realized to date. The suspended-dielectric 1-m-long column is split into two sections, permitting pressure programming.

Furthermore, each section is individually temperature programmable. Each requires only 11mW to raise the temperature of the column by 100°C in vacuum, a fourfold improvement over previous μGC columns. The column has separated 10 alkanes in 52 seconds and five chemical warfare and explosive simulants in 60 seconds. The performance of the column, represents almost a tenfold increase in performance over previous low-power columns.



Low-mass column structure.



Separation of 10 components in 52 seconds with the 1-m-long column.