

Selecting a GC Column

Capillary column selection can be a challenging task for many chromatographers. Several simple principles can be kept in mind to simplify the selection process and result in the optimum column for the analytical task at hand. Keep in mind that in selecting the proper capillary column, the chromatographer is faced with many options that require optimizing analysis speed, retention or capacity, and resolution. These three analysis goals are affected by several factors or variables contained in the resolution equation:

$$R = \frac{1}{4} \sqrt{\frac{L}{h}} \times \frac{k}{k+1} \times \frac{\alpha-1}{\alpha}$$

↑ Efficiency
 ↑ Capacity
 ↑ Selectivity

R=resolution; L=column length; h=HETP; k=capacity factor; α=selectivity

The resolution equation is divided roughly into three sections consisting of variables affecting selectivity, efficiency, and capacity or retention. Looking at how each section of the resolution equation influences the analytical separation will make column selection less difficult.



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