

## Effects of sample solvents on peak shape on early eluting compounds in HPLC, and EFLC/SFC separations

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### Abstract

As preparative chromatography was the first "killer application" for supercritical fluid chromatography (SFC) and the use of CO<sub>2</sub> as a mobile phase and mobile phase component. Developing a scalable, fast way for separation methods with enhanced fluid chromatography (EFLC) and SFC is an integral element of the progress. In studying the effect of sample solvents for EFLC/SFC, we selected polar modifier solvents such as water and methanol. Such polar solvents will produce possible splitting of early eluting peaks while working with EFLC /SFC in using similar injection volumes and mobile phase composition compared to HPLC. The separation of standard test mixtures of polyaromatic compounds were used to evaluate the effect on early eluting compounds. Naphthalene peak showed distortion and further splitting as the mobile phase composition gets a higher percent of CO<sub>2</sub>. For better chromatographic advantages while working in EFLC and SFC, a sample should be dissolved in the less polar solvent as much as possible consistent with the mobile phase composition. The use of pre-heated mobile phase is also another suggestion for handling polar mobile phase solvents at elevated temperature to minimize problems with early eluting peaks shape.

**Keywords:** EFLC, SFC, water, methanol, sample solvents