
Can I use trifluoroacetic acid (TFA) to improve the chromatographic performance in LC-MS analysis?

Trifluoroacetic acid (TFA) is very often used as an additive in HPLC, because of its excellent solvating and ion pairing characteristics. It is a highly volatile acid as well, which could make it an additive for LC-MS analysis.

However in many studies it was found that TFA causes spray instability and ion suppression in APCI (atmospheric-pressure chemical ionization) and ESI (electro-spray ionization) ionization techniques. In a recent study 1 it was found that TFA was the worst additive for ESI or APCI and formic acid was the best choice.

Note: Regardless of the additive used in LC-MS the response of analyte decreases with increasing concentration of ionizing agent. For this reason it is important to keep the concentration of an additive as low as possible. 1 D. Temesi, B. Law, LCGC 17(7), 626 (1999).

