Separation of peaks with low GC retention

How can you improve peak separation with low retention?

- Use split injection: split injection reduces the amount of solvent that enters the column and the amount of sample that dissolves in it, also reducing the width of the peaks. Attention: split injection reduces the amount of sample that reaches the detector, so you may need a higher concentration.
- Reduce the injection volume: a smaller injection volume reduces the amount of solvent inside the column and improves retention, at the cost of some sensitivity.
- Reduce the initial temperature of the oven: this procedure allows condensation («focusing») of the analytes on the column head. Note that this procedure increases the analysis cycle, as the column must return to a lower temperature with each injection.
- Use a guard column: the use of a guard column allows the analytes to be more effectively separated from the solvent, improving their subsequent interaction with the phase. It also increases the life of the column.
- Increase film thickness: a thicker film dissolves volatile compounds better and results in a longer retention time for initial peaks. A thicker film also dissolves larger amounts of solvent and minimizes peak distortion caused by eventual solvent immiscibility with the phase.

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