



Preparative chromatography techniques for the isolation of pure standard components from natural samples

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The isolation of pure molecules from complex samples is a hard task, especially when the quantities to be isolated are in the milligram level and in a reasonable time (1 day). Recently a multidimensional GC-prep system operating in heart-cut mode was developed hyphenating three chromatographic dimensions, equipped with as much as possible orthogonal stationary phases. The novel system proven to be suitable for the collection, in a very short time, chemicals from real samples with a degree of purity higher than 95%. Nevertheless, the demands for the isolation of components at concentrations <10%, would consist in an increased injection volume, even if this option carry to a GC liner overloading. With the aim to improve the capability of the system, an on-line four dimensions chromatographic system (prep LC-GC-GC-GC) instrument was developed. Such a system enabled the injection of higher sample volumes and thus the reduction of the total collection times, while maintaining high levels of purity. The applications presented in this presentation reports the use of the system in different configurations in order to demonstrate its suitability for the collection of pure components from different flavour and fragrance samples. The system was equipped with different stationary phases, namely apolar, polar, ionic liquids and chiral phases, with the aim to attain the best separation of the components selected for the collection. The collection step was realised by using a preparative station connected to the third GC dimension allowing the collection of multiple components due to the presence of a 10-position carousel. Furthermore, two preparative stations were positioned both in the first and second dimension in order to be able of collecting the components already resolved in these dimensions.