

CLOUD POINT EXTRACTION : AN INTERESTING ALTERNATIVE TO LIQUID-LIQUID AND SOLID-PHASE EXTRACTION.

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In emergency situations, rapid analytical methods that enable the separation and quantification of ultratrace levels on radionuclides in biological and environmental samples are essentials. Among the available strategies, cloud point extraction (Cloud Point Extraction or CPE) allows separation through dehydration of nonionic surfactants caused by the aggregation of micelles during the increase in temperature and allows the recovery of an ion, previously complexed in a small volume. This ability to separate and preconcentrate, highly sought after in the environmental field, has been demonstrated for many non-radioactive contaminants in various biological and environmental matrices, but has not gained much interest in radiochemistry because of some drawbacks. It is rarely possible to extract efficiently in highly acidic matrices, thus limiting its application to environmental samples that are prepared or preserved in acidic solutions. In addition, the majority of CPE systems use binding agent with poor selectivity limiting their application to solutions with high dissolved solids.

As part of this project, various binding agent were studied for their ability to bind to various radiocontaminants. The limitation regarding the sample acidity was also assessed. Finally, strategies to automate CPE will also be discussed.