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# Performing matrix extraction and characterization of copper samples by High Resolution Inductively Coupled Plasma Mass Spectrometry

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Copper is a material that finds a wide range of use as it usually has a high purity in terms of contamination regards to Th and U, this feature makes it suitable for nuclear physics experiments where a very low degree of contaminations is required to obtain low background. Given high purity of copper, mass spectrometry analysis performed by dilution is a bad way because it would be very difficult to estimate contaminations; matrix extraction is a procedure very useful to concentrate chemical elements that need to be measured.

TRU column is a good tool to perform matrix extraction of trans-uranic elements, they're composed by chromatographic resins based on CMPO (octylphenyl-N, N-di-isobutyl carboamyle phosphine oxide) extractant diluted in TBP (tributyl phosphate). A process of conditions is necessary to reach low values (10-12g -10-15g) in terms of concentration related to Th and U, alternated rinsing with HNO<sub>3</sub> and (NH<sub>4</sub>)<sub>2</sub>C<sub>2</sub>O<sub>4</sub> were performed. High Resolution Inductively Plasma Mass Spectrometry were adopted to characterize contaminations in many type of samples including copper, a procedure of mineralization is necessary to obtain an aqueous solution suitable to be measured; importance to check amount of <sup>232</sup>Th and <sup>238</sup>U is related to estimate natural radiation, low background in apparatus located in underground is achieved also with high purity of materials used during installation of experiments.

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