

Application of TIMS for the Detection of ^{239}Pu and ^{240}Pu in Urine

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Abstract: High-sensitivity, high-accuracy actinide measurement techniques developed to support weapons diagnostic capabilities at the Los Alamos National Laboratory (LANL) are now being used for the determination of plutonium in urine. The application of class-100 clean room radiochemistry and Thermal Ionization Mass Spectrometry (TIMS) enables us to detect as little as 10 femtograms of plutonium in a sample and to determine the isotopic signature for samples containing sub-100 femtogram amounts.