A dried residue specimen preparation method was developed in recent years to quantify analytes in plutonium metal using WDXRF.\textsuperscript{1} This process involves casting drops from a dissolved plutonium solution and drying them prior to analysis. Thus, the possibility of radioactive liquid leaking into the spectrometer is eliminated.

In previous work the authors were successful in quantifying gallium in plutonium samples with a relative precision and accuracy of $<1\%$ using this dried residue technique.\textsuperscript{1} To prevent the plutonium from absorbing most of the analyte signal, it was removed using ion exchange chromatography prior to casting the dried residue spots. However, chromatography increases the process turn-around-time (TAT) and generates excess radioactive waste. Thus, a dried residue method using dissolved plutonium solutions directly would be preferable.

In the present work, new means for casting thin, uniform films directly from plutonium solutions were investigated. Using this method gallium and iron were quantified in plutonium. Rather than casting spots and drying them, the plutonium solution was cast on a hydrophilic surface forming a very thin and uniform film in order to minimize specimen reproducibility error. Results using this new, modified dried residue approach will be discussed.