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The new electroplating solution based on a citric-oxalic-sulfate matrix

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The article proposed a new electrodeposition solution based on a citric-oxalic-sulfate matrix intended for high-resolution electroplating of actinides. The suggested method originated from the well-established oxalate-ammonium sulfate solution, but instead of DTPA and hydroxyl ammonium sulfate, citric acid was used. Since the volume of electrolyte, distance, and current density were discovered to be the same as for standard oxalate-ammonium sulfate solution, the focus was aimed to evaluate the optimal concentration of all compounds, the working range of pH, and the chemical yield, resolution, and the uniformity of deposited layer of the selected actinides, namely Am, Pu, U, and Cm. The obtained results were the same or better than using the standard plating solution while eliminating expensive and harmful chemicals.

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