

1 Preparation and sublimation of uranium tetrafluoride for the production of thin $^{235}\text{UF}_4$ targets

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6 7 Abstract

8 Triuranium octoxide was converted into uranium tetrafluoride by a wet chemical precipitation method. The
9 triuranium octoxide was first converted into uranylchloride. In the next step the uranium(VI) was reduced to
10 uranium(IV) by adding tin(II)chloride. Finally the reduced uranium(IV)chloride was converted into a fluoride in
11 reaction with hydrogen fluoride and a residue was formed that consisted of uranium tetrafluoride.

12 The obtained uranium powder in its tetravalent state was used for the production of thin layers of $^{235}\text{UF}_4$ by
13 sublimation from a resistance-heated Ta crucible. This paper describes in detail the different steps of the
14 radiochemistry in the wet conversion process and the sublimation of uranium tetrafluoride as physical vapour
15 deposition technique to prepare thin uniform $^{235}\text{UF}_4$ layers.

16 17 18 19 Keywords

20 ^{235}U , target, physical vapour deposition, radiochemistry, wet chemical precipitation

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