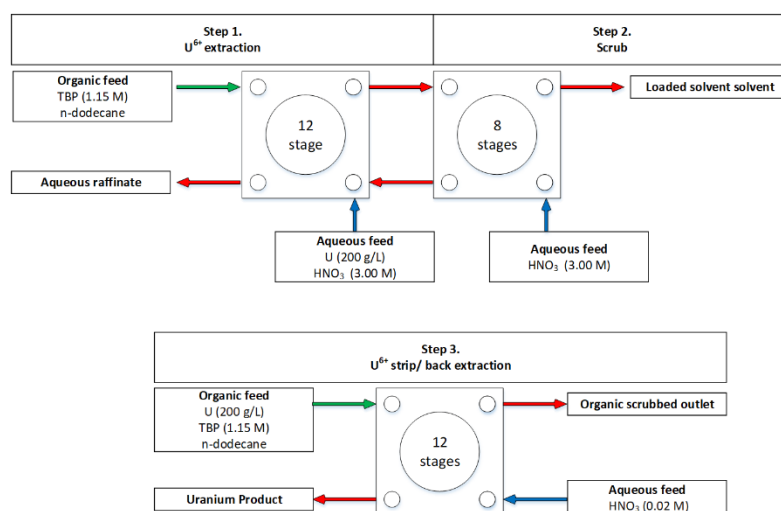


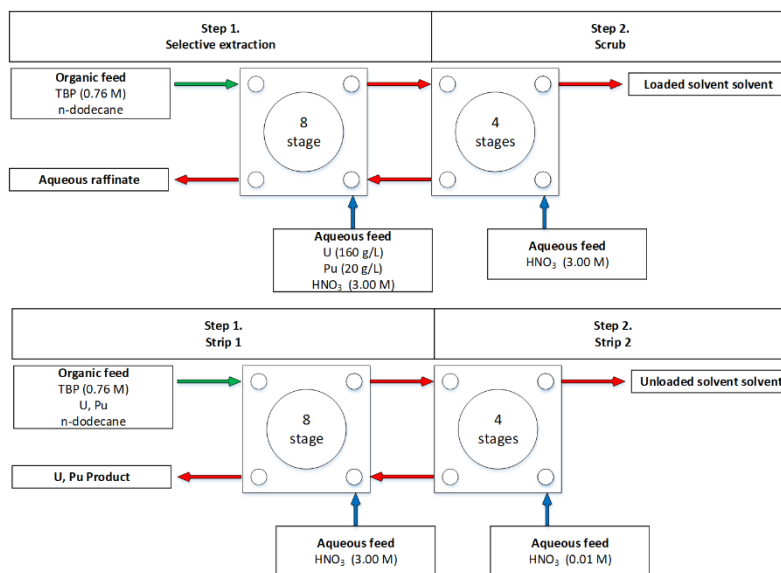
Supporting information: Process intensification of f-element extraction using centrifugal contactors in the nuclear fuel

Alastair Baker, ^{*a} Alex Fells,^a Michael J. Carrott,^b Chris J. Maher^b and Bruce C. Hanson^a

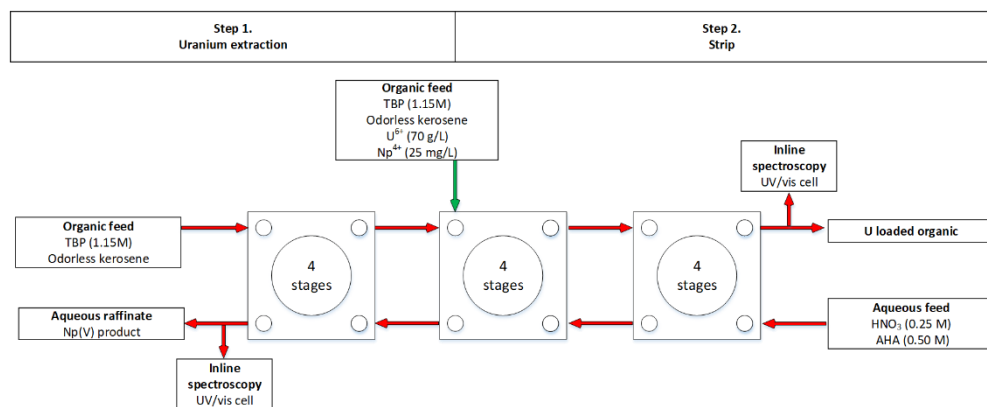
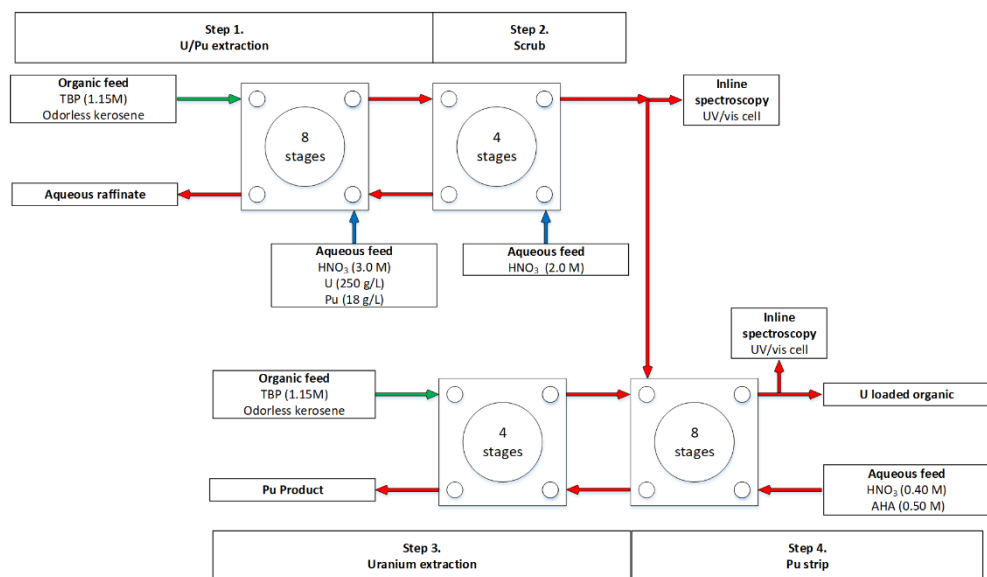
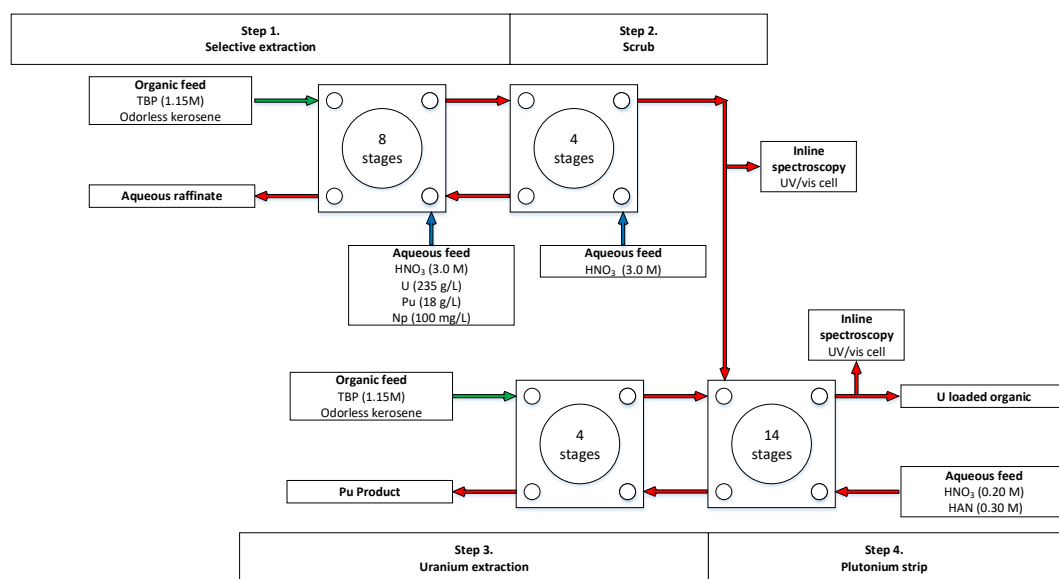
This supporting information includes solvent extraction performed in the process intensification equipment known as Centrifugal Contactors (CCs), implemented in Spent Nuclear Fuel (SNF) reprocessing and radioactive waste processing.

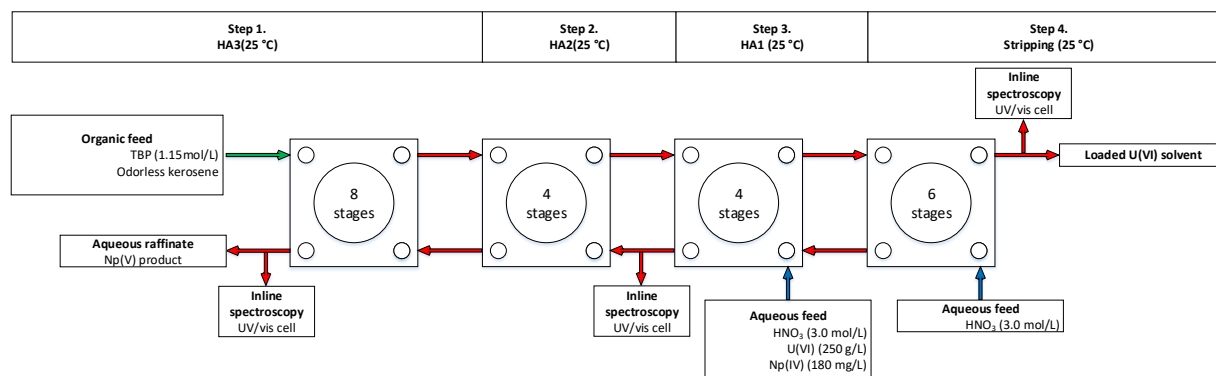
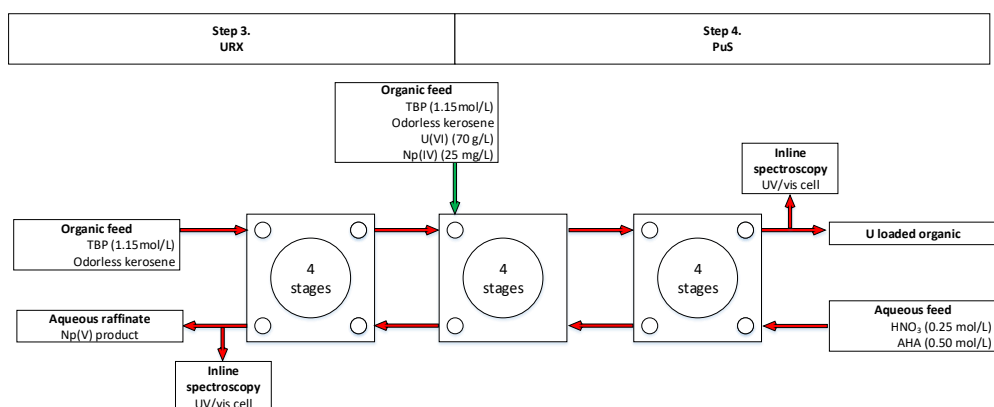
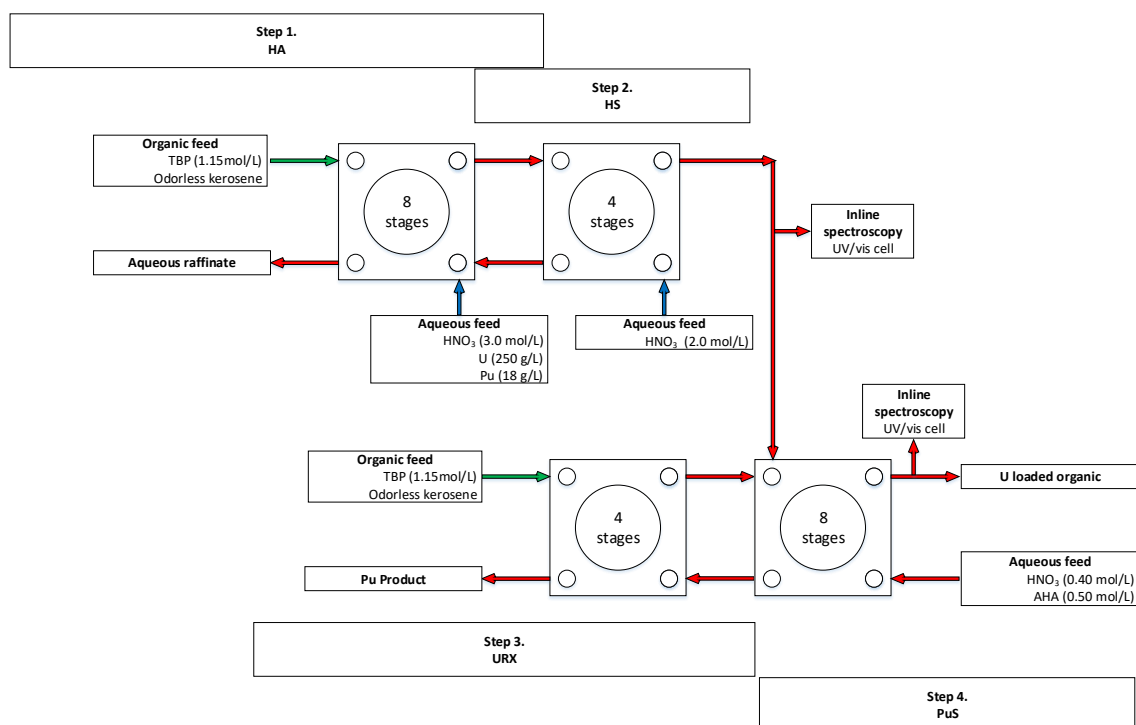


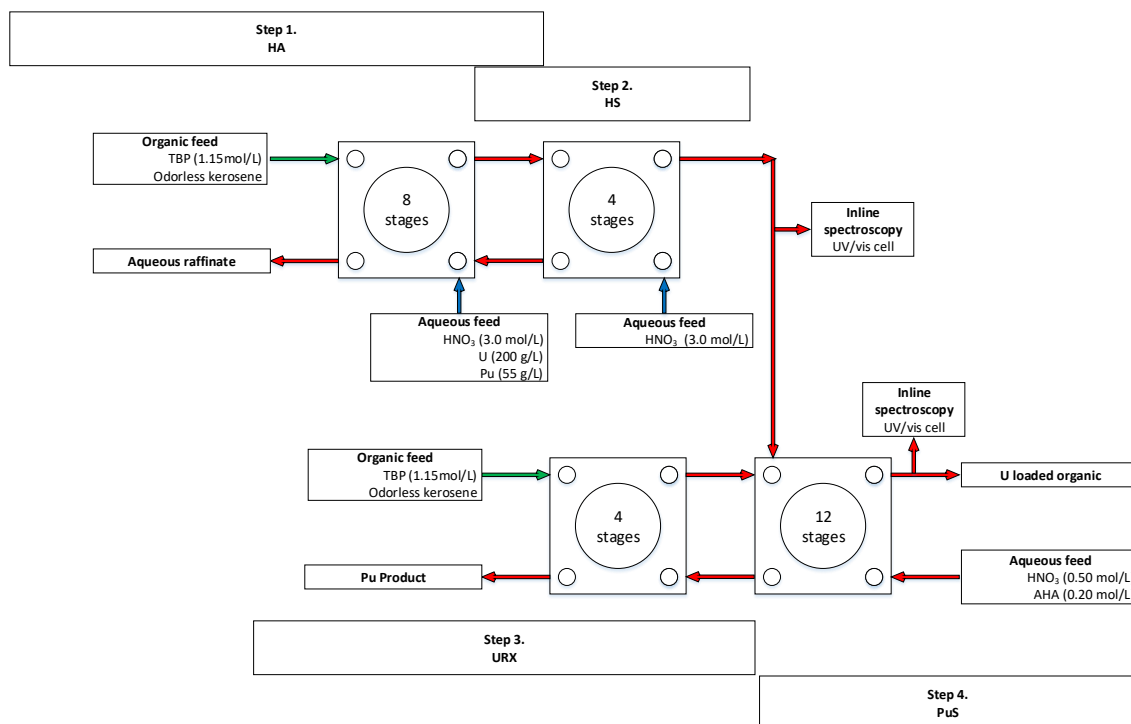
SI Figure 1. PUREX flowsheet performed sequentially on a cascade of 24 stages of 25mm RD JAEA CCs.¹



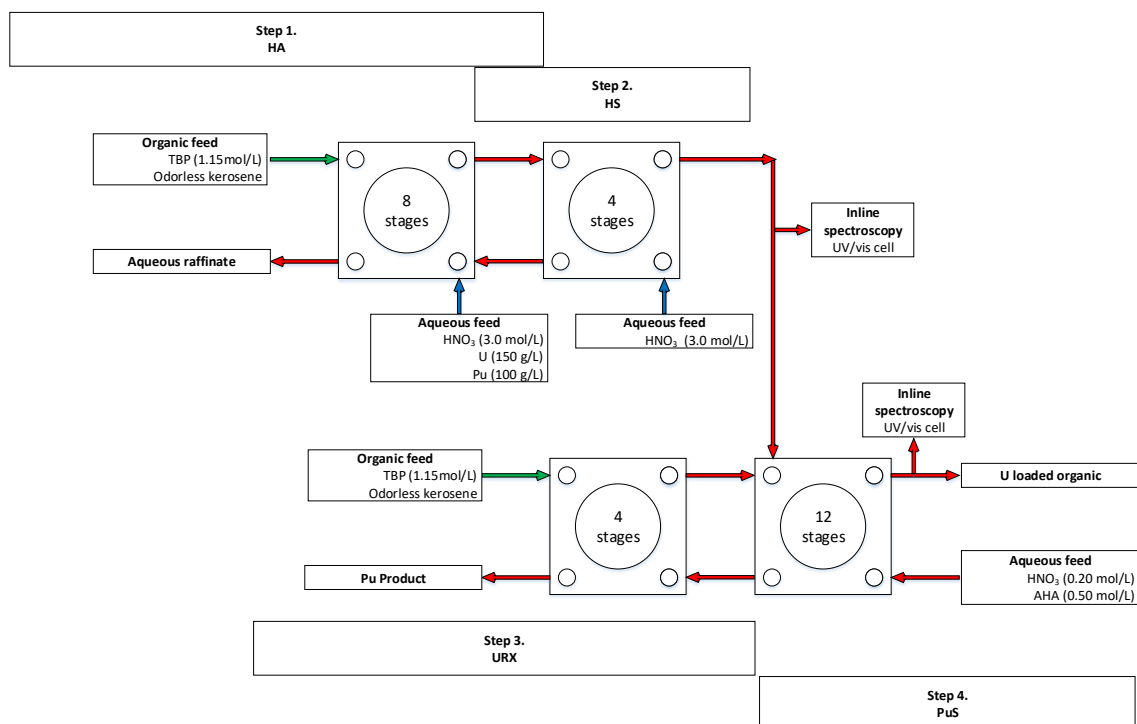
SI Figure 2. PUREX flowsheet demonstrated performed over two runs on a cascade of 12 stages of 55mm CCs.³

SI Figure 3. Advanced PUREX flowsheet for U and Np partition using AHA performed on a cascade of 12 stages of 10 mm RD CC.²SI Figure 4. Advanced PUREX flowsheet representative of extraction and partition of U and Pu (7 wt%) using AHA performed on a cascade of 24 stages of 10 mm RD CC.²SI Figure 5. PUREX flowsheet representative of extraction and partition of U and Pu (7 wt%) using HAN performed on a cascade of 30 stages of 10 mm RD CC.²

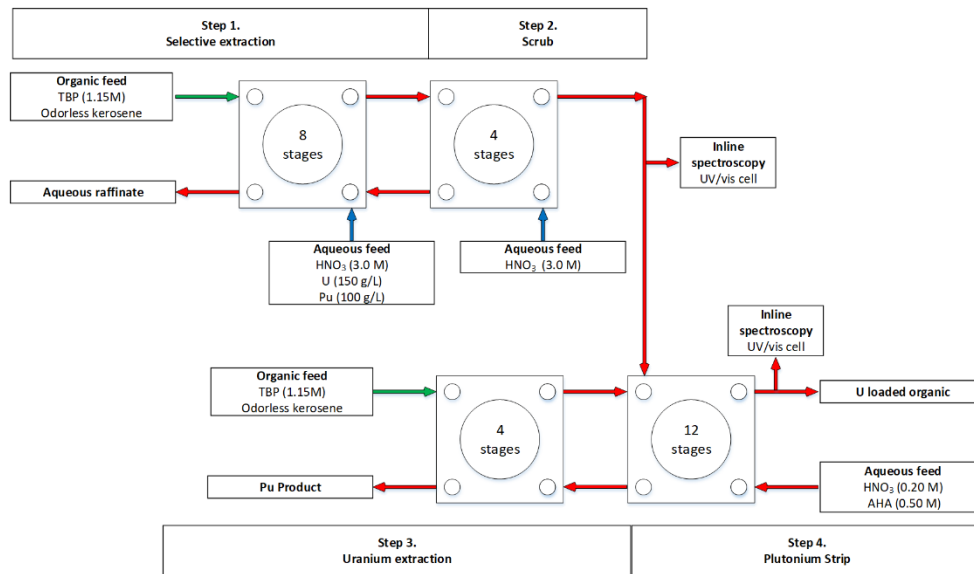
SI Figure 6. PUREX flowsheet for U/Np extraction performed on a cascade of 22 stages of 10 mm RD CCs.^{2,4}SI Figure 7. Advanced PUREX flowsheet for partition of U and Np using AHA performed on 12 10 mm CC^{2,4}SI Figure 8. Advanced PUREX flowsheet representative of extraction and partition of U and Pu (7 wt%) using AHA performed on 24 10 mm CC²



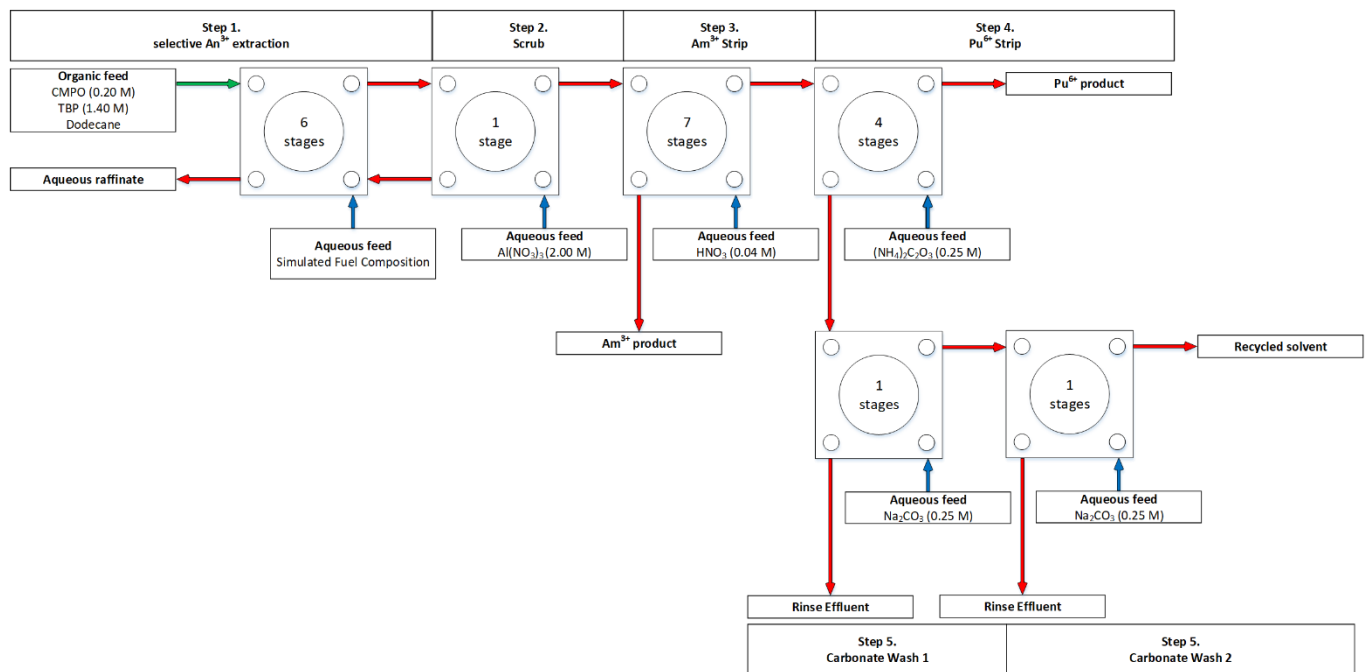
SI Figure 9 Advanced PUREX flowsheet representative of extraction and partition of U and Pu (20 wt%) using AHA performed on 28 10 mm CC²



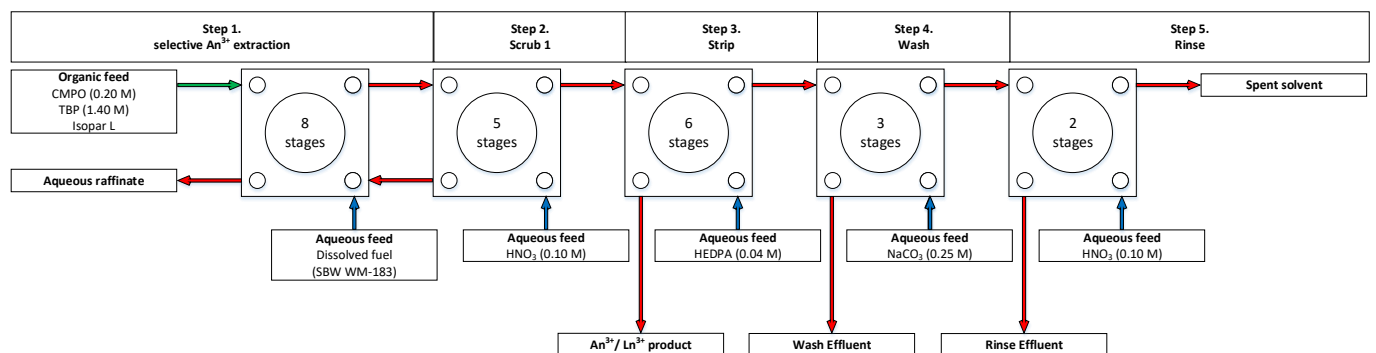
SI Figure 10. Advanced PUREX flowsheet representative of extraction and partition of U and Pu (40 wt%) using AHA performed on a cascade of 28 stages of 10 mm RD CCs. ²



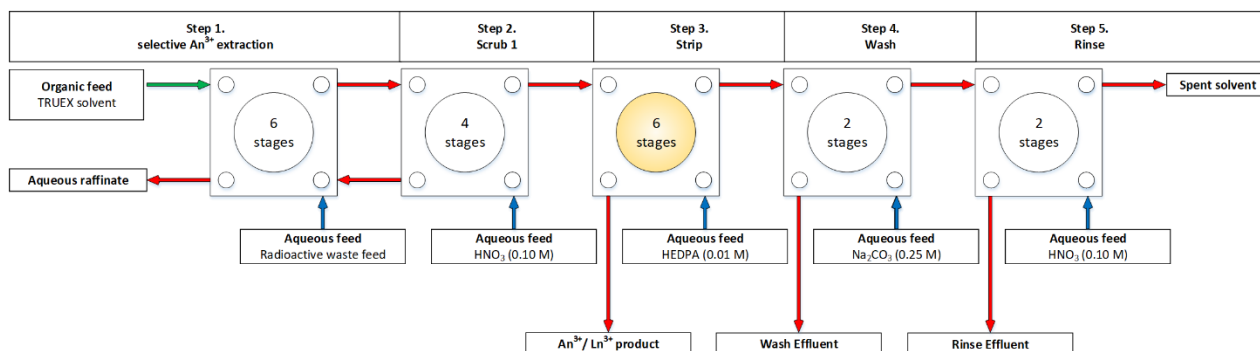
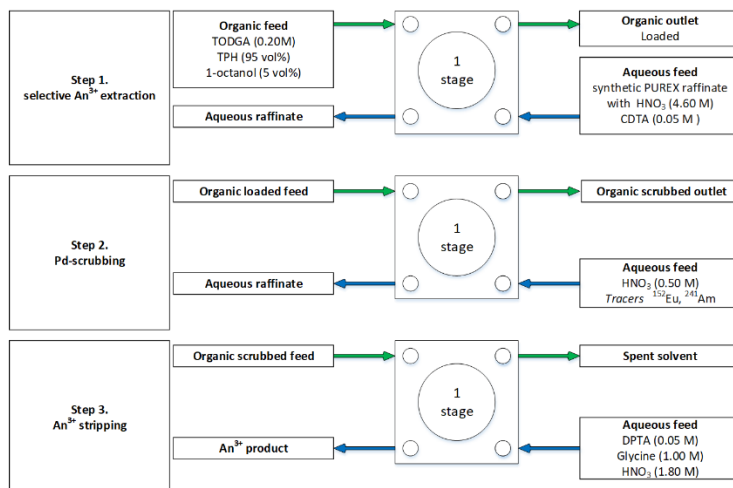
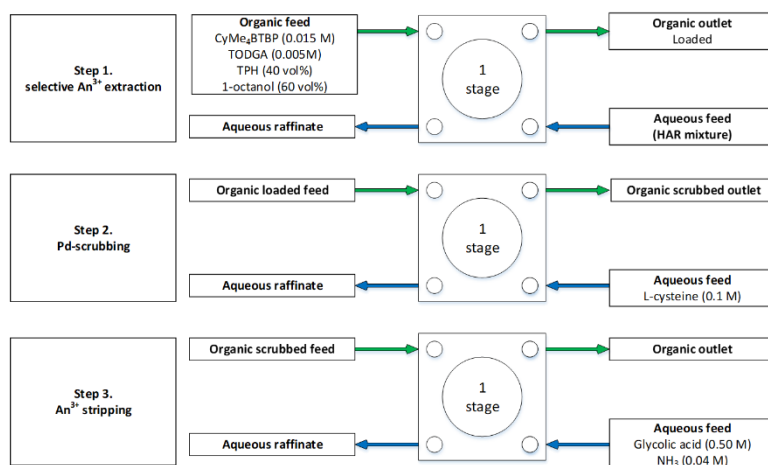
SI Figure 11. PUREX flowsheet performed on cascade of 24 stages of 10 mm RD CCs.²

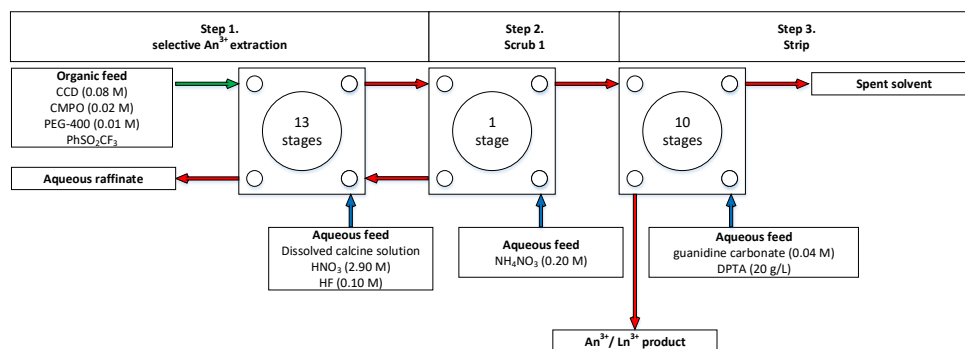


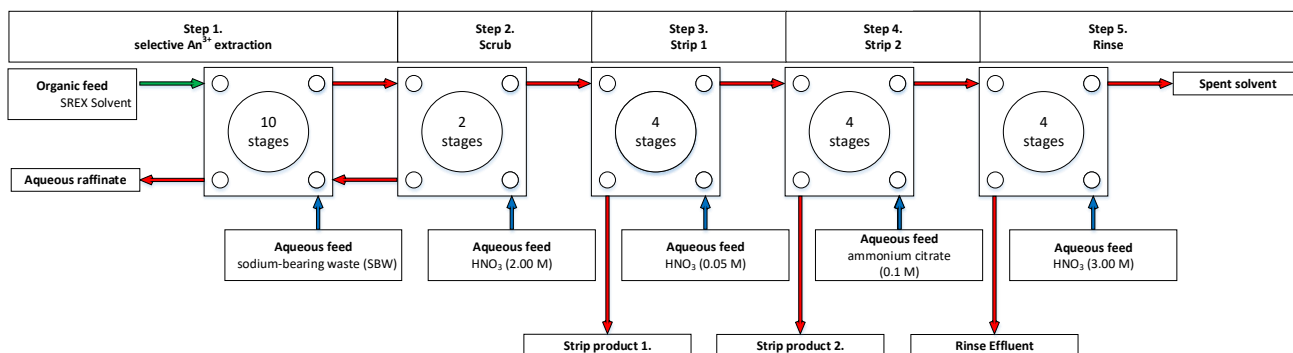
SI Figure 12. TRUEX flowsheet demonstration performed on a cascade of 20 stages of 40 mm RD CCs⁵



SI Figure 13 TRUEX flowsheet demonstration performed on a cascade of 24 stages of 20 mm RD CCs.⁶

SI Figure 14. TRUEX flowsheet demonstration performed on a cascade of 20 stages of 40 mm RD CCs¹⁰SI Figure 15. Single 10 mm CC stages simulating SANEX flowsheet⁷SI Figure 16. Single discrete contactor SANEX performed in 55 mm CC⁸

SI Figure 17. UNEX flowsheet performed on a cascade of 24 stages of 20 mm RD CCs.⁹



SI Figure 18. SREX flowsheet performed on a cascade of 24 stages of 20 mm RD CCs. ¹¹

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