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## **U-rich ceramics for Spent Fuel or Acidic 99Mo Production ILW**

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Spent fuel has long been unofficially classified as HLW which is cooled for a few years to allow the dissipation of short-lived fission products and then is to be contained in thick-walled Cu or carbon steel containers for deep repository disposal where it is argued that the containers will perform immobilisation for ~105 yr. However immobilisation assumes highly reducing conditions in which UO<sub>2</sub> is essentially unreactive and even water-soluble fission products will be contained. The only published engineered waste form for spent UO<sub>2</sub> fuel is synroc-F in which the U concentration is nearly 50 wt.% and the fission products are incorporated in resistate titanate mineral phases. We have tried to extend this concept by hot isostatic pressing glass-ceramics in which synroc-F constitutes the ceramic phase and the glass furnishes a second phase for fission product immobilisation and increases the general reactivity. We have also used the same approach for acidic 99Mo production ILW.

### **Summary**

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