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难熔金属在乏燃料后处理设备中的应用研究进展

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摘要 开发难熔金属来替代超低碳不锈钢作为乏燃料后处理设备用材料已成为后处理设备用材料的发展方向。锆合金在后处理环境中具有优秀的耐蚀性能,通过合金化处理改善了其具有应力腐蚀敏感性的特点。Ti5Ta合金已在日本东海村后处理厂进行了中试运行,它的综合性能评价较好,在后处理环境中应用也最具前景。印度对其开发的Ti5%Ta1.8%Nb钛合金进行腐蚀性能研究,表明它比普通低碳不锈钢和硝酸级不锈钢具有更好耐蚀性。

关键词 [Ti-5Ta合金](#) [锆合金](#) [腐蚀](#) [超低碳不锈钢](#) [乏燃料后处理](#) [硝酸](#)

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Research and Evolution of Refractory Metal Employing in Spent Fuel Reprocessing Facility

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Abstract It is reprocessing facility material development way that exploitation refractory metals replace extra-low-carbon stainless steel as spent fuel reprocessing facility material. Zirconium alloys display excellent corrosion resistance in reprocessing condition. Stress corrosion cracking of zirconium alloys in reprocessing condition is ameliorated through alloying treatment. Ti-5Ta titanium alloy has experimentation function in Tokai reprocessing plant of Japan, it is better in integration performance value. Ti-5Ta titanium alloy applying to reprocessing has the best foreground. Corrosion performance of Ti-5%Ta-1.8%Nb titanium alloy exploited by India was investigated. It indicates the superior corrosion properties of Ti-5%Ta-1.8%Nb titanium alloy in comparison to the conventional stainless steel or nitric acid grade stainless steel.

Key words [Ti-5Ta alloy](#) [zirconium alloy](#) [corrosion](#) [extra-low-carbon stainless steel](#) [spent fuel reprocessing](#) [nitric acid](#)

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