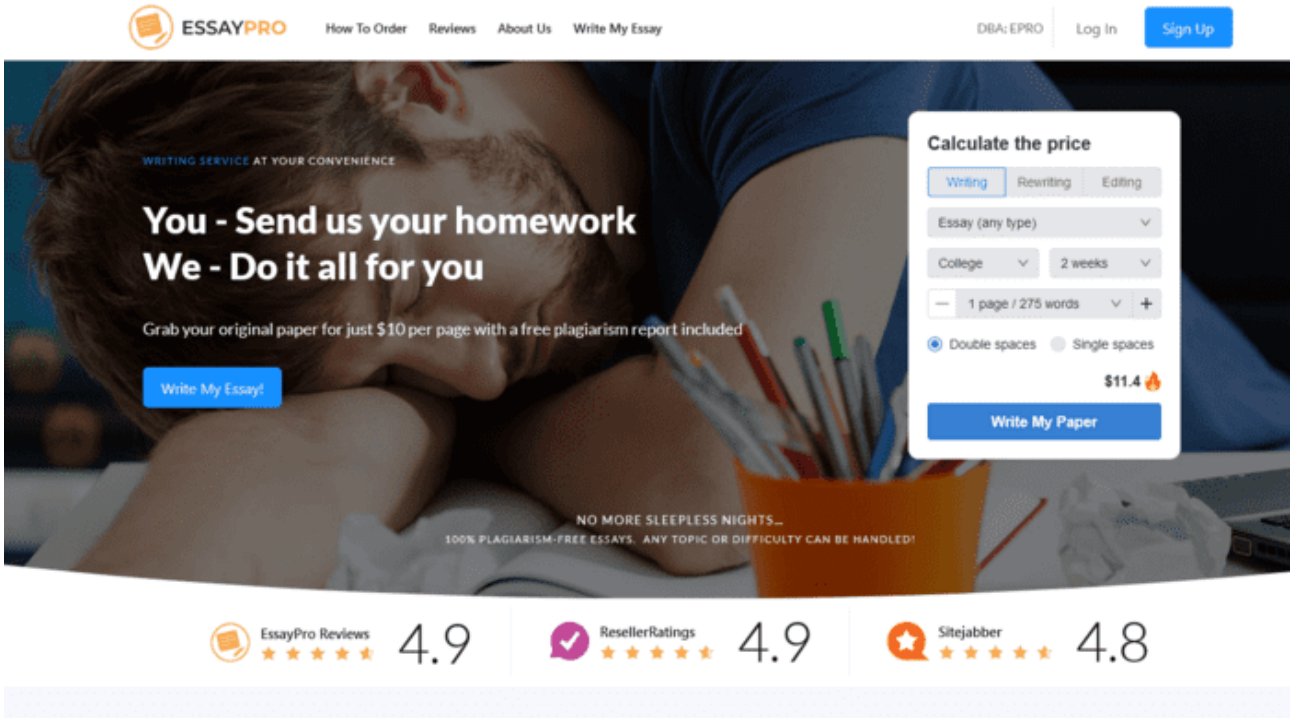
Wasteform for Low Level Waste Essay



LINK => http://787787.com/writing-service?324656916

For LLW/ILW, which comprises a wide range of materials, require suitable encapsulant to enclose the waste and act as a matrix for packaging. The choice of encapsulant is not solely dependent on the physical and chemical nature of the waste, there are other factors to be considered.

Firstly, the acceptable criteria for immobilisation of radioactivity; the waste form should be able to physically immobilise the radioactivity before closure of GDF. During early post closure phase, it might be advantageous if the wasteform still contributes to the containment of radionuclides. These include limiting radionuclide release to the groundwater and providing a stable and durable solid product with low leading rates [7]. The second factor to consider relies on the chemical nature of the waste. The encapsulant should be designed to be chemically compatible with the waste and the container. This consideration required knowledge of reactions of the wasteform in a certain timescale, which shall be discussed in later part of the study. Since the radionuclide ionised in random behaviour, materials may breakdown and lead to the release of radioactive substance. These lead to the third factor to be considered, the encapsulant are designed to have a considerable tolerance to radiation doses, which should encountered both the waste being encapsulated and the surrounding waste. Fourthly, the resulting wasteform

should display some physical integrity over the changes in the surrounding environment in a certain timescale. Finally, the flow properties of encapsulant are considered. Encapsulant are designed to be able to penetrate through the waste in complex geometries to allow a complete immobilisation of waste.

There are two types of encapsulants com...

... middle of paper ...

... selected metals as canister materials for UK spent fuel and/or HLW, Quintessa Report QRS-1384J-1

24. POURBAIX, M. (1974) Atlas of Electrochemical Equilibria in Aqueous Solutions, 2nd edition, NACA International, Houston, Texas.

25. HUE, F., MON, K., PASUPATHI, P., GORDON, G. and SHOESMITH, D. (2005) A review of corrosion of titanium grade 7 and other titanium alloys in nuclear waste repository environments. Corrosion, 61, 687-1003.

26. NAKAYAMA, G., SAKAKIBARA, Y., TANIYAMA, Y., CHO, H., JINTOKU, T., KAWAKAMI, S. and TAKEMOTO, M. (2008) The long term behaviours of passivation and hydride layer of commercial grade pure titanium in TRU waste disposal environment. Journal of Nuclear Materials, 379, 174-180.

27. LITTLE, B., WAGNER, P. and MANSFELD, F. (1991) Microbiologically influenced corrosion of metals and alloys. International Materials Reviews, 36, 253-272.