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A New design of a PWR fuel assembly for direct recycling of spent fuel

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A new design for the PWR fuel assembly has been proposed, in a previous work, for direct use of the PWR spent fuel without chemical or dry processing has been proposed. The proposed designed assembly consists of four zircaloy-4 tubes. Each tube contains 7 or 8 CANDU fuel bundles stacked end to end. The zircaloy-4 tube has the same inner diameter of CANDU pressure tube. The PWR spent fuel bundles will be transferred directly to CANDU reactors without processing. The CANDU reactor is preferably be built in the same site to avoid the problem of transportations. In the current work, a different case has been studied for improving the uranium utilization and for reducing the high level waste. Generally, the calculations resulted in that the burnup would be increased by about 35%. The proposed strategy would reduce the high level waste. Moreover, direct recycling of the spent fuel would degrade the plutonium vector which enhances the proliferation resistance.

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Egypt

Primary author: Prof. MOHAMED, Nader

Presenter: Prof. MOHAMED, Nader

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