Used Nuclear Fuel and Waste Related Concepts

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National Need and INL Focus Areas

- UNF Management and Disposal
  - SNF behavior of high burnup fuels during storage and transportation
  - Understanding long term behavior of Tc and I into the environment
  - Modular SNF repackaging facilities
  - Innovative SNF transportation concepts
- HLW Treatment and Disposal
  - Economic treatment of MSRs liquid phase (salt and end-of-life fuel) and off-gas
  - Economic decommissioning strategies for Molten Salt Reactor (MSR) facilities
  - In-situ HLW treatment for small scale and laboratory wastes

Potential University Collaboration Areas

- Development of technical basis to address fuel integrity
- Effectively predicting migration of radiologic components into the environment
  - Are we modelling the correct species?
- Advanced Methods for Manufacturing
- Robotics technologies for use in nuclear facilities
- Transportation for the future
  - We know how to do it safe, but can we do it more efficiently?
  - 175 rail and truck shipments annually for 24 years to move 70,000 MT
- Development of end-of-life disposal concept for MSR
- Development of new technologies to minimize HLW generation at the source
**Used Nuclear Fuel and Waste Related Concepts**

<table>
<thead>
<tr>
<th>Potential Funding Sources</th>
<th>Potential Outcomes</th>
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<tbody>
<tr>
<td>• NEUP, BES, NSF, Industry</td>
<td>• Computational tools</td>
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<td>• OCRWM (or equivalent), DOT</td>
<td>• Proposals to build prototypes</td>
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<td>• Ideas for IRPs or new focus areas of research</td>
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