

Seed Grant Application Cover Page

PRINCIPAL INVESTIGATOR:

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ADDITIONAL INVESTIGATORS:

Name:		Title:	
Department:		Email:	

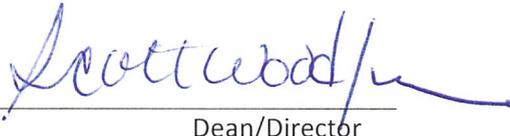
Name:		Title:	
Department:		Email:	

Amount Requested:

Proposal Title:

This is an internal proposal that DOES NOT need to be routed through OSP

SIGNATURES OF APPROVAL:

		
Principal Investigator	Department Head	Dean/Director
Principal Investigator	Department Head	Dean/Director
Principal Investigator	Department Head	Dean/Director

PROPOSAL CHECKLIST:

- X Abstract
- X Narrative (2 single-spaced pages)
- X Budget Page
- X Biographical Data
- X Publications/Exhibits/Performances (5 years)
- X Proposals Submitted/Funded (5 years)
- X Summary of Previous Seed Grant(s)
- X Applicable animal/human requests for approval are attached

Has seed grant previously been awarded? Yes No
 If yes, have report(s) of previous seed grant(s) been submitted? Yes No
 For Previous Awardees--has a proposal been submitted to an outside organization? Yes No

If so: Organization _____ Date Submitted: _____ Funded: Yes No

ELIGIBILITY:

- Early faculty establishing scholarly program (5 years or less employment at UI)
- Established faculty transitioning into a new scholarly area

Abstract.

Reprocessing of spent nuclear fuel with recycling of fissile isotopes is necessary to optimize energy extraction from actinide resources and to minimize waste product production. Conventional separation processing of actinides and fission products requires the use of hazardous organic solvents with relatively high disposal costs. However, novel separations processes using room temperature ionic liquids (RTIL's) either alone or in combination with supercritical fluid CO₂ (sc-CO₂) are being developed. The RTIL can be reused and the sc-CO₂ phase recycled, after removal of radionuclides. The overall goal of the project described here is to clarify the fundamental molecular level interactions that underlie extractions of actinides and lanthanides into RTIL'S and sc-CO₂. Understanding these chemical interactions will help researchers to better understand the extraction mechanisms at play in the RTIL/sc-CO₂ system, and to more fully optimize extraction efficiencies as well as to develop new extraction techniques. I propose to use Raman and infrared spectroscopies to study how molecular interactions between RTIL's and sc-CO₂ affect actinide speciation and solvation in mixtures of those solvents under differing conditions of pressure, temperature, and complexing ligand.