

Topic Area 11 Q&A

Q: I have a novel seal design that would be applied to supercritical CO₂ power cycles. Would it fit in this area?

A: It could fit. It is going to depend on where it's at in respects with the rest of the balance of the plant. We would be interested on the reactor side, not necessarily if it's in the power machinery.

Q: For off-gas capture, are materials that capture both I and Kr are of interest or can the materials be specific to individual species? Also, is the focus primarily the baseline materials as identified in the references?

A: Yes we are interested in Kr-85, I-129 and/or the species listed in the references.

Q: Would it be of interest to develop structures that are resilient to stress corrosion cracking? Specifically, modification of microstructure to make the base structure (316L) less susceptible to SCC.

A: Those would be of interest to the AMMT and LWRs.

Q: Regarding the synergy between irradiation damage and mechanical loading, is there a priority towards investigating existing code-qualified alloys (possibly extending their regimes), alloys currently under qualification process, or novel alloys?

A: Yes. We are currently doing work in all of those areas.

Q: Regarding structural materials, how to address characterizing materials for radiation, do we need NSUF access or is it okay to characterize it in micro-scale using small radiation source?

A: We have seen projects use both of those approaches. Both can be done.

Q: Can R&D projects can be done without NSUF?

A: Yes. NSUF has a materials library. It is possible that an already irradiated material may be available so you can do your characterization work. You can have access to the library, if funded. The NSUF website has the database library. (NSUF Fuels and Materials Library: https://nsuf.inl.gov/Page/nfml_request)

Q: Does real-time monitoring of additive manufacturing fit this topic area? If yes, is DOE interested in monitoring system development or sensor hardware development?

A: There are a number of different areas of work in this area. We are interested in it. AMMT has recently established its own website so that we do have information on work that is being done in that area. This is to make sure we are not doubling up or doing different similar processes. (AMMT Website: <https://ammt.anl.gov/>)

Q: Does mechanical performance of degraded concrete components fit in this topic area?

A: It would fit in this area.

Q: Would development of new alloys for additive manufacturing of reactor components or compositional optimization of existing alloys for additive manufacturing of new reactor components be of interest?

A: Yes, it would be of interest.

Q: Does NDE of LWR components for embrittlement with no focus on manufacturing still fit within this topic?

A: Yes, it does fit.

Q: Does repair of reactor structural components fall in this topic area?

A: Yes, it does.

Q: Do materials suited best for advanced reactor concepts best fit here or in Topic Area 1?

A: It would probably fit best in Topic Area 11. It is up to the applicant to pick which topic area they feel the project is best suited for. A program manager can request an application be moved to another area, with the permission of the applicant.

Q: Will capture/separation of Kr and Xe fit this topic area?

A: Yes, it would.

Q: Regarding structural materials, is it applicable to include undergraduate student training with degrees not related to nuclear engineering for this call or is it better not to address that?

A: There is the ability to request funds for a supplement for Research Experiences for Undergraduates program. You can include it that way or include it in the research as part of the overall budget. With regards to degrees not related to nuclear engineering, we talk about nuclear energy research topics which is broader than nuclear engineering alone. In this case, there clearly could be a relation to material science, mechanical engineering. It may not be exactly a nuclear engineering degree. This program is not only for nuclear engineering departments, it's for nuclear energy related research and development.

Q: For purchasing equipment that is \$50k, is it possible?

A: The overall research and development project can support some equipment purchases to be able to facilitate the research. You can read more about the guidelines and restrictions for the funding opportunity. Please reach out to NEUP@inl.gov if any further questions arise on this topic.