

Topic Area 11 Office Hours Q&A

Q: How much will molten salt conditions be considered in the materials program?

A: We're certainly interested, although it's not as much of a focus. It's early days, but if you have something innovative for molten salt, particularly for materials or off gas, absolutely.

Q: Will creep and the ASTM code qualification be considered more relevant than other mechanical properties studies for nuclear graphite? Would a proposal on the fracture properties of irradiated graphite be a priority or not?

A: The fracture properties radiated graphite would probably be of some interest, not necessarily just doing the fracture of it. I would ask is that it is, umm related heavily to the ASME probability of failure calculations that are being done at the ASME.

So how do we equate the probability of failure in the change to the probability of failure due to the irradiation? That would probably be more along the lines of tensile strength, reduction or increase of strength, and the fracture behavior. I think just going in and doing a study on fracture behavior of irradiated graphite is not as of interest, but if you can tie it to the ASME probability of failure, then I think that would be much greater interest.

Q: Is there any interest in in-operando, specifically ion irradiation, mechanical testing to emulate neutron irradiation, specifically to qualify and accelerate the qualification of novel alloy compositions?

A: NEUP projects are just for 3 years' time, so probably we cannot afford neutron irradiation.

If we are studying radiation damage, ion beam irradiation is probably a good way to simulate the neutron irradiation especially to screen or test some new compositions of alloys.

Q: Is there any interest beyond compositional screening in identifying stress and temperatures that would have desirable mechanical properties for long-term service?

A: Yes, of course, because we are looking for some long-term capabilities or long term research for the materials discovery.

If you are thinking of focusing on the existing candidate materials, you need to look for some NEUP programs working on that. If you are working on some new materials, new composition, or new designs probably fit this program.

Q: What is necessary to be included in the NEUP email list?

A: Send an email to NEUP@inl.gov requesting to be added to the list.

Q: Could you expand a little bit on what you were referring to in terms of storage and containment. Storage and containment of what is of particular interest?

A: Our particular interest right now is for the materials that are captured from the off gas.

Q: A follow up to the previous question: So, none of the aqueous waste streams?

Not quite as much right now, but that's always of interest. If you have something that's really awesome, that looks really good and very promising, then certainly, new materials are always of interest for long term storage.

Q: I have a question about that innovative cladding material program. I want to get some clarification on what is considered a new material, for example, where like something like ODS that are not fully qualified for cladding application be considered new?

Also, would proposing novel methods of fabrication technologies for existing materials be considered relevant?

A: Yes, for the existing materials like you mentioned, the ODS steel, if you can think about some new fabrication method or a technology we haven't used to fabricate ODS, we still can consider it.

Q: Would concept metallic fuel be of interest?

A: Generally, this topic is focused on materials as opposed to the fuel. So, the cladding would be of interest in this topic, but there's a different topic for the fuel itself.

Q: There is a lot of interest in this innovative nuclear materials program. I've got one hit on Google which is 1 slide from the gain Advanced Materials workshop last year. Could you maybe point us to any documentation that's got any more information about this new program?

A: Last year we had two workshops, one during the ANS Summer Meeting Conference, then another in virtual format. You will find all the documents about this program on the GAIN website.

So we're looking for some new ideas or new concepts for the cleaning materials development or some new method.

Q: In topic areas 11 and 12, there seems to be overlap in terms of advanced manufacturing. If I have a proposal idea, and I'm not sure which of these two areas would be the best fit, should I contact the program managers directly and ask?

The second question is, if I think it fits one area and I submit it to that area, would it be moved if program managers think that it is a better fit for the other area?

A: There is a piece of our initial review process that looks over an application and determines if it is a fit for the topic area. If the reviewers think it would have a better chance in another category, we can make a recommendation to you as the PI to make that change. You can decline to have it moved, but we do have those types of conversations here internally to try to make sure that the application is placed in the in the best topic area where it will have the potential to be the most successful.

If fundamentally, you're really looking at the advanced manufacturing side, and it has more of an advanced manufacturing focus, it probably belongs in topic area 12.

The Advanced Materials and Manufacturing Technologies Road map is available on the DOE website, and I can give you more information about the program as well.

Q: In terms of Topic Area 11, does the development of comprehensive frameworks include the use of machine learning to study whatever material system you're interested in?

A: If you're looking at machine learning as part of what you're doing, yes, but I would shy away from something that is exclusively geared toward machine learning.

Q: Will ceramic materials fit into this topic, such as cladding or fuels?

A: For the cladding materials, if you are working on the silicon carbide you can look at the ATF topic areas. For other applications like ceramic composite coating or some applications on the cladding, we will consider this for the innovative nuclear materials.

Q: Is the development of stainless steel with significantly improved stress corrosion cracking resistance in LWRs of the interest and to which topic area should it be submitted?

A. This is a topic that would best align with Topic Area 11 (Advanced Nuclear Materials).

Q. Is it acceptable to submit both a NSUF 1.1+R&D, such as to NSUF 1.1 and R&D TOPIC AREA 11 on a similar topic?

A. The same proposal cannot be submitted to multiple Topic Areas, including the NSUF Access areas.