

Equipment Funding Opportunities and Strategies for Success (Part 2)

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Editor's note: This series of edited transcripts is from Symposium A-14 at the Nashville M&M meeting August 10, 2011, organized on behalf of the Facility Operation and Management Focused Interest Group, co-chaired by Owen Mills and Christopher Gilpin. This is the second of six talks on this topic; the remaining articles will be published in future issues.

My name is Reza Shahbazian-Yassar, and I am currently an assistant professor at the Department of Mechanical Engineering at Michigan Tech. I am a junior faculty member and have gained some experience with MRI NSF proposals. Fortunately, I have been funded in one of these grants, and also I have served as the reviewer in MRI panels. When Debby was talking about the reviewers' comments for the previous proposal, fortunately, I was not among those who provided those kinds of comments. I am going to share a little of my experience. I see a number of young faces and newer junior faculty who may benefit from what I am about to say. When I started at Michigan Tech, I didn't have much experience with proposal writing, so it was very difficult for me to figure out what sort of discussions I should include in my proposal. I read the solicitation and program description, but some of the details you gain by actually writing the proposal. It's something like writing a paper, you just need to practice writing, and you will be good at it. Please note that following my recommendations does not mean that 100 percent of you are going to get funded (I am not a Superman!). Rather, I intend to help you write a more efficient proposal. What I report complements Debby's point of view. Debby mentioned a general overview of the review process. Here, I will give you steps on how proposals are reviewed and how to write a more competitive proposal. Since I will talk about NSF, I will cover the MRI goals. In NIH or other agencies, there may be different goals.

If you read about the MRI program, it basically says that we want proposals or equipment that increases access to research instrumentation. If, for example, you don't clarify very well why you need this instrument, you might not get a very good score. When I was on the review panel, most of the proposals were good, but there were similar instruments available in the same institution. It was not clear for the panel why the PIs could not use that particular instrument or why someone has that instrument dedicated for himself. For example, why are they requesting a new TEM when there is already a TEM in that facility. Is it old? Is it not operational? Make sure the need is clarified and obvious for the review panel. This is something that most of the time hurts the proposals. Think about whether this equipment is

going to be in a shared facility. Will it increase access for more people, or is it just for your own lab? If the latter is the case, other agencies or private intuitions would be a good route to take. If it will be in a user facility, think about the number of people who will have access, repair costs, and who will pay for it. Think about management issues. Will there be a web-based system where users can sign-up for appointments? Some proposals come with every detail, and the reviewers feel comfortable with these PIs. Talk with the facility director to get some ideas of how many students will use it, and talk with your collaborators, especially if there is a need for space or lower noise level. Sometimes we seek instrumentation that has specific environmental requirements. You should mention this in the proposal.

Another component of an MRI proposal is to increase training and education of students and researchers and to increase the participation of under-represented groups of students. You need to combine this with the science of your research. This information is especially important under broader impact and increasing access to equipment. I have seen proposals that have done a perfect job in intellectual merit, but not the educational part. I remember that once there was a good proposal, but there was no indication of a broader impact. There was no single paragraph about how broader impact was going to be addressed. Although the panel liked that particular proposal, they could not fund it because it did not match the goal of the agency. If you talk about minority students, state how exactly the instrument will be used by them. Can the high school students really come and use it? Are you going to teach them? What projects are they going to do and for how long? Sometimes, the PIs provide a vague description but no details are there to make clear the message for the review panel.

Another goal or need for NSF is to foster collaboration between different units and departments. Principal investigators that come from diverse backgrounds and departments might have a better chance of positive reviews. We have different disciplines; it is not like the past when perhaps all the PIs were from one department. So the proposal should justify how the instrumentation will be shared and used by these groups. Try to have collaborators, have a meeting, and have them talk about their needs. The PI should decide if the co-PIs really need the instrumentation or facility. If not, this can be problematic because their write-up may not be well integrated with the overall content of the proposal.

Another important issue is cost sharing. Typically, MRI needs a 30 percent cost sharing. The cost-sharing requirement depends on your institution—whether it is PhD-granting or

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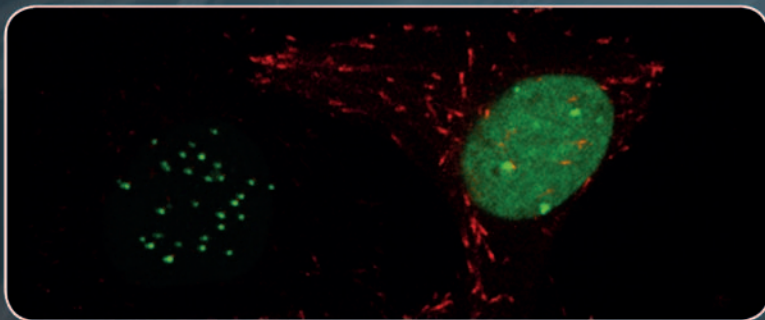
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not—but, in general, if you need to provide cost sharing, it can be in terms of technician times or post-docs or things that will be used to train other people. If you can provide cost sharing by salary support, that's great. You can talk with your department chair to get help. If the requests for funding become larger and larger, cost share becomes more critical. In the review process, it is important to show a high level of commitment in terms of cost share and institutional support.

All costs must be justified; try to give as much detail about the requested equipment and the specifications, such as image resolution or specific current or voltage values. Try to mention it because some of the reviewers already work in this area and some may think that this equipment will not do the job for you. So get a quotation from a vendor and add it to the proposal as an attachment. This will help clarify some of the technical issues.

When I started submitting proposals, I didn't know how the review process worked. Usually the program manager categorizes the proposals. For MRI, there could be 5 or 6 panels: one for TEM, one SEM, one on XRD, and others for different techniques. Then the program manager calls or emails different faculty members and invites them for a panel. If you are a junior faculty and you haven't submitted, it's a good idea to contact the program manager to ask to be on a panel. It will give you useful experience to prepare your proposal. Usually a few weeks before the panel review, reviewers will have access to the submitted proposals and can start to read the proposals. Initially the reviewers will have access to the abstract and title

of the proposals, so make sure the abstract and title are right. If you're requesting specific instrumentation, make it clear because the reviewers choose the proposal based on that information. Usually, the reviewers get between 6 and 10 proposals to review. Reviewers try to do a fair job and really care about the proposals, but there are so many good proposals, which makes the selection very difficult. So you must pay attention to all the details for proposal preparation. For instance, if you write a proposal to get a TEM, you should not think that everyone on the panel is an expert in TEM. Some might have only used it, whereas others might only know the theoretical part of TEM. Write your proposal in a way that is clear for a broad range of reviewers with different levels of expertise in that field.

One of the things I see that often hurts proposals is that the PIs write in a very boring manner. You can't read the 15 pages line by line. A good technical proposal might be turned down if it is not constructed in a way that highlights the most important items. Use schematics and figures to convey your idea. Don't use fonts that are too small because it becomes very difficult to review. There is regulation in NSF about the font size, but some people can get away with small font sizes. My time is up—final things: Pay attention to intellectual merit and broader impacts. These two should be addressed in the summary page. Out of 20 proposals, usually there are 2 or 3 that don't address these two items. If you need any help or have questions, contact me by email.

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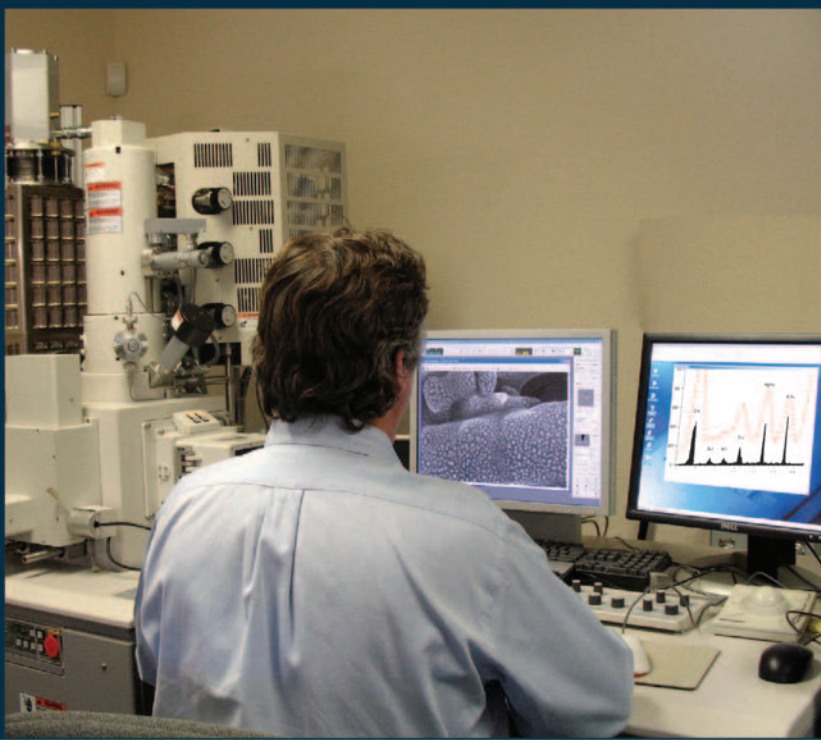
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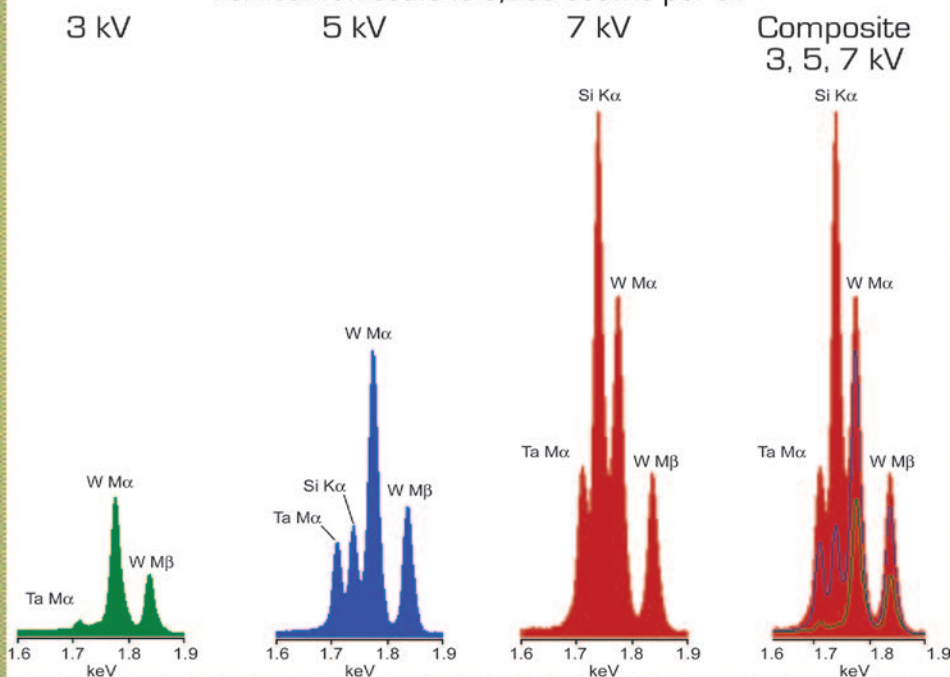
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