

## Concluding Discussion Of Current And Possible Future Topics M&M 2000 Expert's Session on Facility Management, Part 4

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*This article is the final of a 4-part series transcribed from the discussion taped during the Facility Management session at M&M 2000. It is printed with permission of the Microscopy Society of America. Bulleted paragraphs indicate comments by individuals attending the session.*

- To get back to billing and cost recovery, one of the problems we continually face in our lab is that people can come through the door with any kind of problem under the face of the earth. We are wide open to any sort of EM research. This entails an awful lot of protocol development. It does not always seem fair to bill a customer on an hourly basis to for our lack of knowledge about their specific problem. I wonder if someone would like to address how they handle that in their own facility. One example came up earlier about how many immuno runs does it take to get somebody results and how much of that should be billed to the customer. That is just one example of a never-ending problem.
- We have some of the same thing at our university. I have a core facility in the biomedical area but we get everything from polymers to viruses to whatever. Because our office of research partially funds the facility and we also get some salary funds paid by the College of medicine we don't have to generate as much money. I tend to take a pretty liberal attitude toward technical time. It's not a stated thing but if spend a lot of time working with someone to develop techniques, I bill them for a very minimal part of that. I tend to bill the instruments at the time we actually spend on them but I tend to shave the technical time quite a bit for technique development.
- We do that too. For example, now we are looking at bubbles. They bring us vials of bubbles and want us to image these things in a field emission SEM using a cryo unit.
- There are alternative ways to look at that though. If that investigator was to hire someone to do that and they have to pay fringes on top of salary, you are cheating yourself. There has got to be a happy medium somewhere
- What we have often done is do a pilot experiment. A pilot experiment is meant to rope the people in...to say "hey look, we can get something for you." It may not be perfect but once I have done it one time, I have a pretty good idea of what I am up against. The next time I can probably start getting data that means something. And if I roped that person in, that more than makes up for the time I have spent on the pilot experiment in future revenue, potential revenue or facility use.
- I am in the same situation. Our facility is extremely diverse. We certainly can't reinvent the wheel for each new project. We actually do request and require that a lot of the scientists coming in do their own research. I ask them to bring me some articles and we will sit down and consult and go with a game plan that they feel comfortable with and that we, on the technical side, also feel comfortable with. So I am very pro consultation.
- I agree with that entirely. I think that any new project should come in with some references that are related to give you a starting point. Whether you or they are doing the work, you still have to start off at some point, sit down and discuss the pros and cons. I am in an academic institution and I feel very, very strongly that we are not there to just teach but to educate. If you use the opportunity to educate all along the line, you will end up with a lot less problems, a lot more interaction with your users and a lot more success with your research projects. One thing that I have often found is that a student will come with an idea. The idea may be to use the TEM to do a particular thing. You have to say, "Wait a minute". We have to sit down and make out a research plan. What do you want to do? How many samples are you thinking about? What are your controls? What information are you really trying to get?" before you ever start preparing a sample. Often times they want the wrong instrument or they haven't thought it out well enough to get a project that will actually yield results. I also believe very strongly that the major professor should approve this research plan that you have actually asked them to put down on paper. Sometimes they don't know what their students are doing. They're the ones that ultimately get stuck with the bill. So you had better make sure that they are willing to pay before you get too involved with a project.
- I have a funny. I had a graduate student come up to me. He had seen a very interesting paper on sections of mice. I work with horses. He wanted me to perfuse a horse, do thin sections and look at an entire horse. (Laughter) Serial sections of a horse... that's your hoot for the day!
- Yeah I can go along with some of that too. We also have people come in with a signed billing document. It should be from the PI, not the accounting people because I want the PI to know what the student is bringing in the door. They get a bill each month that reflects all the charges and actually who the individual was who actually gave them to me. If there is a problem it is between the PI and the student and not me in the middle saying, "I didn't know you didn't authorize that".
- It is highly embarrassing when an investigator comes down and says to not let a particular person charge any more to their grant.
- On a couple of those issues, that's why it's important to have monthly bills and maintain that communication. We want to have real-time accountability so the PI's can pull up their record. You can do a "not to exceed" type of contract. I didn't mention earlier but our application form requires signatures of the student, the technician, the PI and the accounting person.
- A possible useful direction for this group is the issue of ethics. We have touched on it a couple of times. I once had to pry a staff member way from a professor. They were having an argument over a machine and when I finally got down to the facts, the professor wanted my staff member to record photographically an image of the control because it showed exactly the experimental result he wanted. To what extent do we get involved with this? To what extent are we the policemen of this? To what extent, with the ease of manipulating digital images, do we get involved with this? This could be a potentially useful future topic.
- I deal with a lot of thoroughbred racehorses, internationally, and a lot of times I will do a necropsy on a horse where the cause of death is being contested. A lot of my information has to go to court so I am very aware and very concerned about digital images. I have to have a hard copy to back up a lot of this stuff.
- Another future topic. I come from Canada and I run a characteri-

zation group in a federal lab. This group formed around an SEM and TEM core decades ago and now we have expanded quite significantly. A few years ago, we were ordered to get into recovering costs through contract work. It was a traumatic experience but we blossomed from it. When people pay, they expect something from it, much more than when it is free. The fact that we have satisfied people who have paid money has raised the self-esteem of the scientists and technologists. It has also decreased the ego factor because they are looking to solve the problem. That relates to what I suggest could be a topic for next year. As a materials lab, I do courses on microtoming hard materials. Just in the last couple of years I have had people come to me from perhaps a biology EM lab in a university and either by their design or the dictates of the campus, they have been asked to service everyone. Suddenly they've got engineers, chemists, and geologists coming with all sorts of weird materials. I would like to propose that the way to look at the future positively is to think optimistically. Think growth, not just holding the course and keeping the funding coming in dribs and drabs. I am thinking that when you get all the equipment, many of which are million dollar plus items, especially things like SIMS, high end TEMs and FEGs and so forth, the EM unit is always the core unit. It has the most expense. But then over in Geology they've got a microprobe or even a SIMs, in Chemistry they've got XPS and OGA, physicists have atomic force microscopy and so on. I think that this group could be the core group to eventually have campus-wide groups where you can really and truly solve the problem. As opposed to a TEM person, which is my background, trying to sell TEM to the *n*th degree when I can see that SIMS will solve the problem, I'll go to SIMS. Now it is not a trivial transition to end up down the road a "campus microbeam center" or something like that but the bigger you get the more likely you can survive and grow. When you are small you can fall below critical mass awfully easily. Anyway, that is my proposal for something for next year.

- Our campus is looking at this much much harder with, I must say, a certain amount of opposition among people who don't want to give up their turf. The idea is to try to convince people that they have to look beyond their own needs to the needs of the entire research community. If they will do so and combine resources, not only physical resources but also mental resources, the ability to justify new equipment will suddenly be a lot easier. The access to equipment will also open up. But I certainly see a great many problems with trying to get this concept through to the microscopists who are holding on tight to their instruments. This is another major problem. I think that with the cost of equipment such as it is and the difficulty justifying specific pieces of equipment to federal grant-

ing agencies, if we do not look beyond our small group we just are not going to be successful.

- Just another topic that we might address in the future might be the issue of liability regarding results that come out of our labs. This almost became an issue for me personally in the last few months. In a previous lab position I did some work for a start-up company that was trying to locate precious metals in mining tailings. They were developing chemical techniques for concentrating these precious metals to economically useful concentrations. They would bring the results of these experiments to me and I would run EDS on them and determine if the metals were there. I clearly found them but I made it very clear at the beginning that I was not able to quantify these samples but was able to find traces of these elements in the samples. Well on the basis of this I was shocked to find out one day that they had started to build a multi-million dollar facility based on these results, even though I told them clearly that there was not much there. This had the potential of resulting in a major lawsuit but I have been assured that we will not be in any danger of such a suit. However, it does point out the potential problems associated with misrepresentation or misinterpretation of data. ■

One can be fooled by appearances, which happens only too frequently, whether one uses a microscope or not.  
 ...Voltaire in *Micromegas*


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