

**Feedback for
 “Nanoscale Characterization”
 Taught at The University of Queensland, Brisbane, Australia
 By Prof. Michael E. Mackay
 August 2-4, 2006**

Course content: Optical microscopy, SEM, TEM, Dynamic and Static light scattering, SANS, SAXS and AFM

Questions	1	2	3	4	Average
My Overall impression of the Course			12	22	3.6
My Overall impression of the Instructor			5	29	3.9
The course organization was good		1	8	25	3.7
The topic covered were appropriate		1	12	20	3.6
The depth of each topic was appropriate		5	22	8	3.1
The length of the course was appropriate		5	14	13	3.3
The pace of the course was appropriate		7	18	8	3.0
The handouts were clear and meaningful		3	17	14	3.3

1= Negative, 2= Weakly Negative, 3, Weakly Positive, 4= Strongly Positive

Comments:

- I think I needed more time understanding, the light scattering section. Maybe a few more examples, i.e. Worksheets, data analysis ect where it can enforce this part a little further. However, I would like to thank Prof Mackay for giving us an insight on Nano scale characterisation techniques.
- I think this course need longer time to learn.
- Basic physics and optical concept needed, or one might get lost.
- It would be good to have some samples rather than just theory.

- Could you please organize another course giving, practical Nano-Characterization training such as TEM, XPS, and XRD.
- The derivation of necessary equations for scattering phenomena was a bit too extensive. I think a direct comparison of DLS and SLS would help to understand both techniques better.
- It could have had some images of what the equipment looked like. Compact or large.
- Some Raw data and typical outputs of the scattering instrument could have been instructive. The raw data gives information about the nature of the measurement (signal to background noise). Most scattering instrumentation has an output of distribution plot. Not just a number.
- Some pointers to further information could have been good. Either text books or websites. Some manufacturer's websites are quite helpful.
- The course could have been given over 5 days instead of 3. Especially the SLS and DLS.... need time for old minds to absorb equations and see what they physically mean at the same time– the SEM & TEM were excellently paced & thus gave good mathematical and physical understanding for example.
- A lab demo afternoon would be great too –link with CMM or Surface Analysis centre on return UQ trip??
- NMR would be good extension – I never understood that shit.
- I think this is a very good introductory course. Perhaps the course should be run annually for new researchers or someone wants a refresher on these techniques. Additionally a handout should be given detailing the facilities available to UQ researchers and who should be contact about these facilities.
- It was a very good experience for me especially because I am a postgraduate student and learned a lot of things which might help in future if not in my thesis right now. For me take home message was that there is a lot you can do with your samples even if you think that a particular instrument is not working for you. Or the other way round, which I think apply to me that I dint do proper justice to my samples and I could have done better job with TEM.
- I think I represent most people's views when I say that the static light scattering was a little confusing but may be it was just because it was last lecture of the day which already contained a lot of math. But I could still pick up few key points so it wasn't as bad as the response we got in the end which I think was 2.09!
- Michael Mackay is a good speaker and knows his subject well. The course was very good, but there was too much to absorb in three days. (I do understand that this will always be a problem with short courses aimed at a diverse audience).We managed to cover optical microscopes and electron microscopes without going too deep into the

maths, Yet light scattering required a large amount of maths. Luckily all this mathematics was used again in the neutron scattering.

- Maybe the course should be re-titled “An Introduction to Nanoscale Characterization with emphasis on Scattering Techniques as applied to Polymers”
- Given the difficulty of the topic, I think Michael Mackay did a very good job. I was very happy to attend the course and would recommend this course to others.
- It would be good to have more samples rather than just theory.
- Most of the course was at an appropriate level of theory behind the techniques, but I think that there were perhaps too many equations in the dynamic and static light scattering sections. I tended to get a little lost during these sections and it would have been better to spend more time discussing the advantages/ disadvantages of these techniques rather than going into detail of the mathematics.
- I think these courses need longer time to learn. Coming from a bio background I got a bit lost in the physics, but found that I could always understand what was going on in general terms.
- It would have been great to have more examples of images gathered by each technique, to illustrate what was possible and how much information you could get.
- Some images of the instruments used would also be interesting to show the size and expense involved with running these experiments.
- I would LOVE to see a more biological specific course like this – would be a great way to introduce people to the new technology.
- Thanks to the organizers, Michael and the uni for putting it on.
- It's better if the place is in a lecture theatre. Too much theory in this course, (I agree that theory is important), so maybe you can give case study. Overall, I learn many things especially the basic knowledge of each instruments. That's great. Thanks so much.
- Really good effort by Prof Mackay to cover a lot of interesting details in a short amount of time. A couple of suggestions: one improvement would be to include more pictures showing a range of samples that could be analysed using these techniques (we seemed to be focusing more on polymer substances c.f. biological and other samples), the other thing is to have it in a room with desks (it was a bit inconvenient to make notes on one's lap).
- Providing the source of these lecture or the lectures as a PDF file is preferable to follow the subject. Thank you

- I enjoyed the course and learned a lot, thanks for your effort to make it interesting. It really was. However, the theory of scattering techniques was too deep and the practical applications of these techniques were not described well. So at the end I was not sure what these techniques are suitable for. I would recommend using more 'real' images and/or 'real' data to demonstrate the practical application of each method.
- The topics covered in the course were great. The only problem is that for those with no or little maths background the materials were a bit too much to be fully understood in 2.5 days.
- If could have had some images of what the equipment looked like. Compact or large.
- Some raw data and typical outputs of the scattering instruments could have been instructive. The raw data gives information about the nature of the measurement (signal to background, noise). Most scattering instrumentation has an output of distribution plot. Not just a number.
- Some pointers to further information could have been good. Either textbooks or websites. Some manufacturer's websites are quite helpful. www.malvern.co.uk has some really great tutorials. Brainshark PowerPoint presentations with a voice over. The only problem is that there are too many of them. They are each about an hour long. Amongst the topics covered are PCS and Static light scattering. <http://www.anton-paar.com/ap/apinternet/html/default/cxsn-5rhf24.en.0.jsp> has some good information about SAXS.
- There mention could have been made of gas absorption techniques to measure pore size and surface area from 1000 angstroms downwards.
- A possible list of people at UQ with expertise and instrumentation to carry out the various types of measurements described in the course. The only problem with this is the workload of the already stretched staff.
- I thought the course was actually really good. The only downside I believe was for an introduction course, there was so much related theory to it, that as people new to the technique need little of that information. I think the problem was the time constraints; it's hard to work through all those theories without having really time to look at the theory itself in more detail. I think for future, maybe adding any other possible techniques and taking a little bit of detail out of the others would work well. Otherwise, great course and the way it was presented by Michael was really well done as well.