SCHOOL REPORT

School: ISIS Muon Spectroscopy Training School 2014
Dates: 12/5/14 – 17/5/14
Venue: ISIS, STFC Rutherford Appleton Laboratory
Organizer's Name: P. J. Baker, F. C. Coomer, and A. D. Hillier
Organizer's Affiliation: STFC Rutherford Appleton Laboratory
Total budget: 22440.46 €
Maximum NMI3-II support: 6000 €

Scope

The ISIS Muon Spectroscopy Training School is a weeklong course that introduces post-graduate and post-doctoral participants to muon spectroscopy techniques, collectively known as μSR, and their applications through a series of lectures and hands-on experiments. The course lecturers are all acknowledged international experts in their field. The ISIS Pulsed Source, at the STFC's Rutherford Appleton Laboratory (RAL), is one of only four sources of muons in the world used for condensed matter investigations. Topics covered will enable participants to gain the maximum benefit from future facility time, provide valuable experience of working at a large, international facility and improve knowledge in related fields such as computing and cryogenics.

Students

There were 22 fully participating students with 5 further students attending only the talks. 34 applications to attend the school were received. Of the fully participating students, 10 were from the UK, 8 from other European institutes, 2 from Malaysia, 1 from Japan and 1 from China. 17 of the participants were PhD students, 4 were Masters students, and 3 were post-doctoral researchers.

Organisation

The training school was organized by members of the ISIS Muon Group. The training school ran from Monday morning until Friday evening and the timetable is shown below:

Time	Monday 12/05/14	Tuesday 13/05/12	Wednesday 14/05/14	Thursday 15/05/14	Friday 16/05/14
08:30			Practical Session 1	Practical Session 2	Practical Session 3
08:45	START				
09:00	**Welcome**	**Applications of**			
09:15	Adrian Hillier	**µSR - Magnetism**			
09:30	**Introduction to µSR**	Tom Lancaster			**Talk Writing**
09:45	Roberto de Renzi				CR16/17, R80
10:00		**Applications of**			
10:15		**µSR - Semiconductors**			
10:30	COFFEE	Rui Vilao	**Data Analysis Workshop**	**Data Analysis Workshop**	
10:45			Francis Pratt & group	Francis Pratt & group	
11:00	**Muon Spectroscopy**	COFFEE	COFFEE	COFFEE	COFFEE
11:15	Adrian Hillier				
11:30	**Analyzing µSR Spectra**	**Applications of**	**Applications of µSR -**	**PSI Muons**	**Applications of**
11:45	Francis Pratt	**µSR - Chemistry**	**Charge transport**	Elvezio Morenzoni	**µSR - Superconductors**
12:00		Nigel Clayden	Martin Månsson		Stephen Blundell
12:15					
12:30	LUNCH	LUNCH	**RIKEN-RAL**	LUNCH	LUNCH
12:45			Isao Watanabe		
13:00			LUNCH		
13:15					
13:30	**Review of basic**	**Practical Session 1**		**Complementary Techniques**	**Complementary Techniques**
13:45	**physics and chemistry**	**& Building a**		**Neutrons and Muons**	**NMR and µSR**
14:00	**Muon relaxation**	**Spectrometer**	**Practical Session 2**	Ross Stewart	Philippe Mendels
14:15	Muon Group		**& Building a**		
14:30	**Data Analysis**		**Spectrometer**	**Practical Session 3**	**RF and Pulsed**
14:45	**Workshop**			**& Building a**	**Environments**
15:00	Mark Telling			**Spectrometer**	James Lord
15:15		**Group Photo**			Alan Drew
15:30	TEA	TEA	TEA	TEA	TEA
15:45					
16:00		**Practical Session 1**	**Practical Session 2**	**Practical Session 3**	**NMI3 and Proposal Writing**
16:30					**Presentations**
17:00	**Social Evening**				CR12, R68
18:00	**and Dinner**	DINNER	DINNER	DINNER	
19:00		**Practical Session 1**	**Practical Session 2**	**Practical Session 3**	DINNER
		and Talk Writing	**and Talk Writing**	**and Talk Writing**	**Farewell/ Prize Giving**
					Adrian Hillier
	Talks - CR12, R68				
	Workshops - CR16/17, R80				
	Practical Sessions - R55				

The participants attend 19 hours of lectures given by ISIS facility staff and renowned international scientists. The first day of the school deals with the basics of muon spectroscopy and data analysis. The remaining days have both lectures on specific areas of science that can be probed with muons and practical sessions where experiments relevant to the students' areas of interest are performed on the muon spectrometers. The students perform two experiments of their choice out of a list of seven, and spend a session building a spectrometer. At the end of the week all the students give a 5-minute presentation describing the results of one of their experiments in order to reinforce the learning they have gained during the week.

Results

Overall, the feedback from students was very positive. The most positive comments were about the experiments and their combination with high quality lectures within the school. Less than half the students noted any areas of the school they didn't find useful and most of these noted areas because they were not directly related to their own work. The majority of students said that the school more than met their expectations. Several students said that they would like the course extended and more time to work through data analysis and take in the material they are learning. We have made the content of all the lectures available online at: http://www.isis.stfc.ac.uk/groups/muons/muon-training-school/muon-training-school-201414926.html.

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