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Deliverable D2.6 – Final report of the different short courses

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Document Abstract

This deliverable is part of WP2 Training, education and networking activities.

The objective is to promote advanced education in the field of FT-ICR MS, mainly sharing newly developed state-of-the-art procedures for experiments and data analysis and training qualified and highly skilled FT-ICR specialists (engineers and scientists). Additionally short courses will include a number of social events generating a fruitful platform for establishing international ties and novel collaborations.

This deliverable explains content and outcome of the short courses performed in the framework of the EU_FT-ICR_MS project.

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1 Introduction

Ten short courses for users converging on a special area of interest, have been scheduled and 3 were organized within M1–M18 with the participation of all EU_FT-ICR_MS partners. Beside tutorial talks, short courses provide hands on demonstrations and exercises. Short courses do not have any fee for participation and cover lodging and social events as well as travelling costs. Short courses last 2 – 3 days and are available for up to 15 attendees

The following short courses have been carried out:

- Short course 1 in Rostock – M3: Atmospheric pressure ion sources for FT-ICR MS.
- Short course 2 in Orsay – M10: FT-ICR for gas phase ion spectroscopy and structural characterization.
- Short course 3 in Roma – M18: Ion-molecule reactions: fundamental and analytical aspects.
- Short course 4 in Warwick – M20: High resolution tandem mass spectrometry of biomolecules.
- Short course 5 in Moscow – M22: Basics of FT-ICR including dynamic harmonization and computer simulation approaches.
- Short course 6 in Prague – M32: Structural proteomics: Analysis of protein surface accessibility by Top Down mass spectrometry.

And the following ones are planned:

- Short course 7 in Liège – M43: Advanced methods for MS imaging with in situ identification using FT-ICR MS. (originally fixed on M34 and postponed to M43 due to COVID19 pandemic)
ICR (originally fixed on M39 and postponed to M51 due to COVID19 pandemic)
- Short course 8 in Lille – M43: 2D FT-ICR: FT ICR in cultural heritage.
ICR (originally fixed on M44 and postponed to M43 due to COVID19 pandemic)
- Short course 9 in Lisbon – M45: Mapping post-translational modifications through FT-ICR (originally fixed on M27 and postponed to M45 due to COVID19 pandemic)
- Short course 10 in Joensuu – M51: Intact protein characterization and native mass spectrometry.

In the event that new waves of COVID 19 pandemic would restrict the access to international travelling and face to face meetings, thus hindering some events, virtual workshops will be organized with online tutorials and remote sessions of laboratory training (sample preparation, data acquisition and data handling) dispensed by a web browser.

Presentations will be video-recorded and uploaded in the project website with an access granted to the attendees registered at those meetings.

2 Short course 1: “Atmospheric pressure ionization techniques for high resolution mass spectrometry of complex samples”

Short Course 1 (SC1) was the first short course and the first event organized within the EU_FT-ICR_MS network. It was held at the University of Rostock, Rostock (Germany) in the period 5-7 March 2018. Tutorial lectures were held by scientists of the EU_FT-ICR_MS network, namely Martin Sklorz (UHRO), Peter O'Connor (WARW) and Jochen Friedrich (BRUKER), instrument demos and hands-on exercises were done by Christopher Rüger and Anika Neumann (UHRO). More than 30 registrations were signed in within the first three days after opening. Due to limited laboratory space for hands-on experiments, ten scientists (5 female, 5 male) from 6 European countries were selected by the criterion “first applied/first served”. Due to this criterion, the educational degree and area of interest were very inhomogeneous. Nevertheless, attendees expressed their satisfaction and consider the event probably to be useful for their future. Announcement flyer and overall evaluation summary are presented below. The lectures and hands on presentations were published for public download on the open project website <http://eu-fticr-ms.eu/>.

2.1 SC1 program and announcement flyer

FIRST SHORT COURSE OF THE EU_FT-ICR_MS NETWORK

ATMOSPHERIC PRESSURE IONIZATION TECHNIQUES FOR HIGH RESOLUTION MASS SPECTROMETRY OF COMPLEX SAMPLES

When?
5-7 March 2018

Where?
University of Rostock
Research building LL&M
Albert-Einstein-Strasse 25
18059 Rostock




Overview of the program

-  **Tutorial Lectures**
Basics of FT-ICR MS using atmospheric pressure ionization
-  **Instrument demos**
-  **Hands-On Exercises**
Electrospray ionization (ESI) and Atmospheric pressure chemical ionization (APCI)
-  **Data analysis**
Comparison of ionization features of ESI, APCI and GC- APCI/ Atmospheric pressure photo ionization (APPI) samples;
In parallel: running GC – APCI/APPI measurements

Schedule for the first short course

Atmospheric pressure ionization techniques for high resolution mass spectrometry of complex samples

Tuesday 6.3. 9:00 – 11:00	Welcome and start with tutorial lecture (basics of FT-ICR MS using atmospheric pressure ionization)
11:00 – 12:00	Lab tour (2 groups)
12:00 – 13:00	Lunch
13:00 – 15:00	Hands on – Electrospray ionization (direct infusion)
15:30 – 17:00	Hands on – Atmospheric pressure chemical ionization
18:30 - 22:00	Social event (guided tour downtown Rostock) and dinner
Wednesday 7.3. 9:00 – 12:00	Data analysis of ESI, APCI and GC- APCI/APPI samples – comparison of ionization features In parallel: running GC – APCI/APPI measurements
12:00 – 13:00	Lunch
13:00 – 14:00	Closing meeting and wrap up

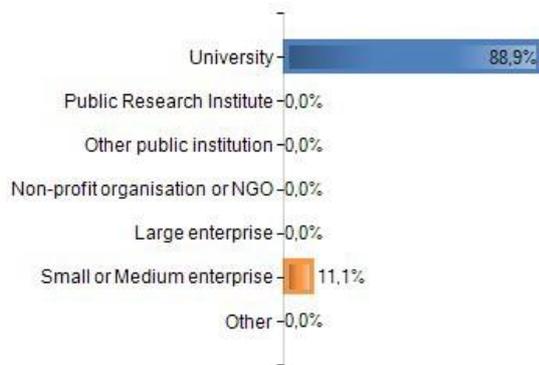
2.2 SC1 evaluation

1. In which context are you presently employed or carrying your research?

	Effectifs	% Obs.
University	8	88,9%
Public Research	0	0%
Other public	0	0%
Non-profit	0	0%
Large enterprise	0	0%
Small or Medium	1	11,1%
Other	0	0%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

Taux de réponse : 100% Modalités les plus citées : University; Small or Medium enterprise

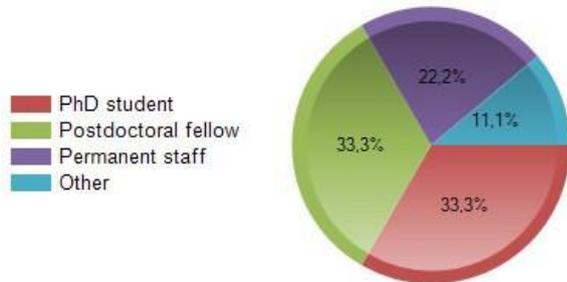


2. What is your current position type?

	Effectifs	% Obs.
Undergraduate / Masters	0	0%
PhD student	3	33,3%
Postdoctoral fellow	3	33,3%
Permanent staff	2	22,2%
Other	1	11,1%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

Taux de réponse : 100% Modalités les plus citées : PhD student; Postdoctoral fellow; Permanent staff

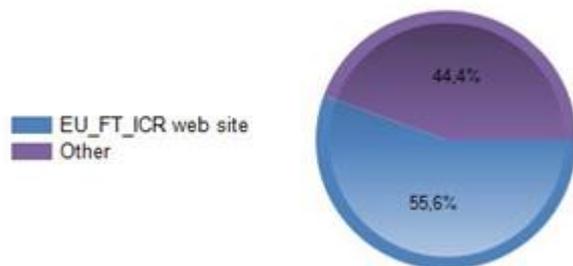


3. By which channels did you come to know about the workshop?

	Effectifs	% Obs.
EU FT ICR web site	5	55,6%
Emailing of the	0	0%
Twitter announcement	0	0%
Other	4	44,4%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

Taux de réponse : 100% Modalité la plus citée : EU_FT_ICR web site

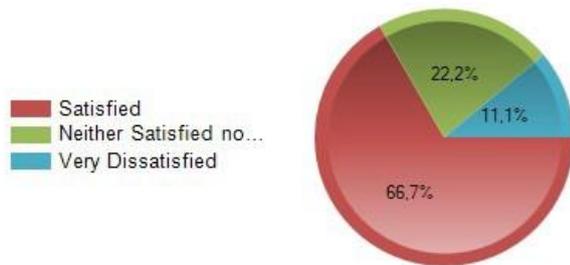


4. Travel to the site

	Effectifs	% Obs.
Verv Satisfied	0	0%
Satisfied	6	66,7%
Neither Satisfied nor	2	22,2%
Dissatisfied	0	0%
Very Dissatisfied	1	11,1%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

Taux de réponse : 100% Modalités les plus citées : Satisfied; Neither Satisfied nor Dissatisfied; Very Dissatisfied

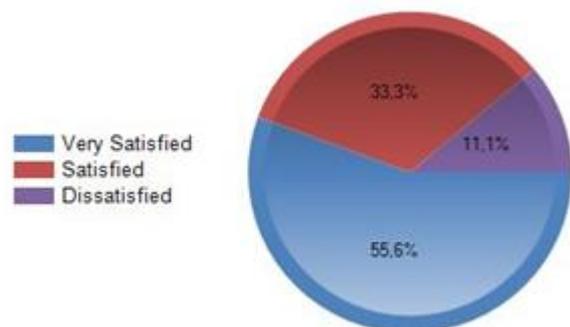


5.Accommodations

	Effectifs	% Obs.
Very Satisfied	5	55,6%
Satisfied	3	33,3%
Neither Satisfied nor Dissatisfied	0	0%
Dissatisfied	1	11,1%
Very Dissatisfied	0	0%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

Taux de réponse : 100% Modalités les plus citées : Very Satisfied; Satisfied; Dissatisfied

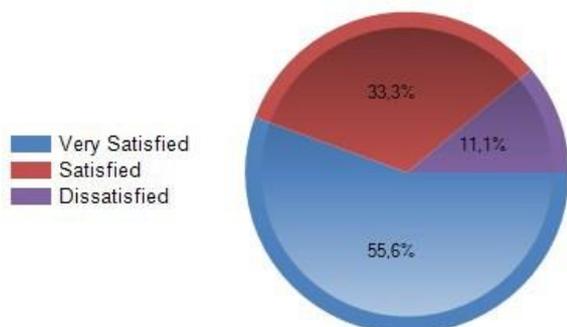


6.Access to the campus / laboratory

	Effectifs	% Obs.
Very Satisfied	5	55,6%
Satisfied	3	33,3%
Neither Satisfied nor	0	0%
Dissatisfied	1	11,1%
Very Dissatisfied	0	0%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

Taux de réponse : 100% Modalités les plus citées : Very Satisfied; Satisfied; Dissatisfied

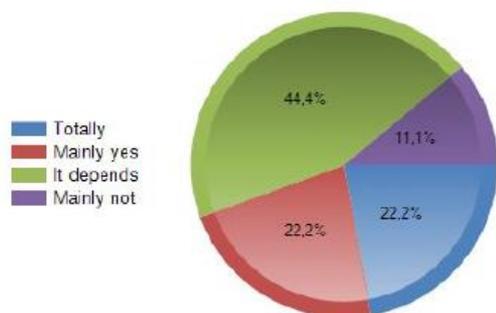


7. Was the level of the short courses adapted to your knowledge in mass spectrometry?

	Effectifs	% Obs.
Totally	2	22,2%
Mainly yes	2	22,2%
It depends	4	44,4%
Mainly not	1	11,1%
Not at all	0	0%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

Taux de réponse : 100% Modalités les plus citées : It depends; Totally; Mainly yes



8. What is your satisfaction level for the short course session on a whole?

	Effectifs	% Obs.
Verv Satisfied	4	44,4%
Satisfied	3	33,3%
Neither Satisfied nor	2	22,2%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

Taux de réponse : 100% Modalités les plus citées : Very Satisfied; Satisfied; Neither Satisfied nor Dissatisfied

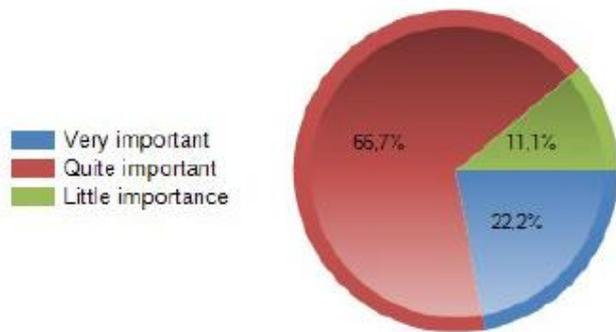


9. Was hands-on practical courses useful in the context of this short course?

	Effectifs	% Obs.
Verv important	2	22,2%
Quite important	6	66,7%
Little importance	1	11,1%
No importance	0	0%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

Taux de réponse : 100% Modalité la plus citée : Quite important

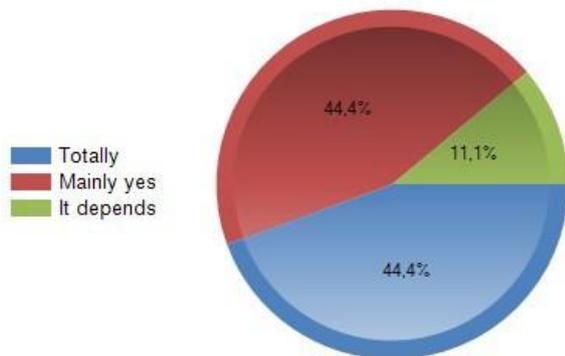


10. The themes that have been covered by the workshop were those as announced?

	Effectifs	% Obs.
Totally	4	44,4%
Mainly yes	4	44,4%
It depends	1	11,1%
Mainly not	0	0%
Not at all	0	0%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

Taux de réponse : 100% Modalités les plus citées : Totally; Mainly yes; It depends

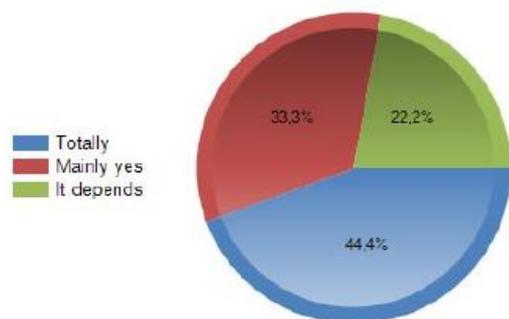


11. Lectures and interventions were adequate?

	Effectifs	% Obs.
Totally	4	44.4%
Mainly yes	3	33,3%
It depends	2	22,2%
Mainly not	0	0%
Not at all	0	0%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

Taux de réponse : 100% Modalités les plus citées : Totally; Mainly yes; It depends

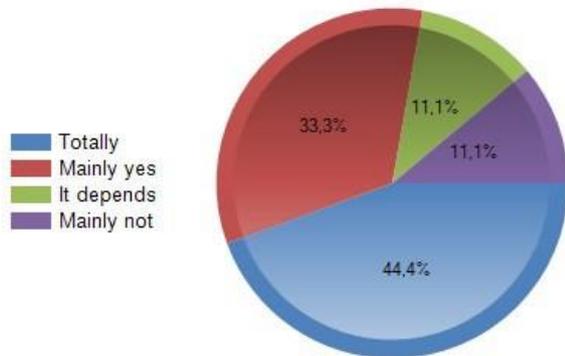


12. Was this session meeting your expectations?

	Effectifs	% Obs.
Totally	4	44.4%
Mainly yes	3	33,3%
It depends	1	11,1%
Mainly not	1	11,1%
Not at all	0	0%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

Taux de réponse : 100% Modalités les plus citées : Totally; Mainly yes; It depends; ...

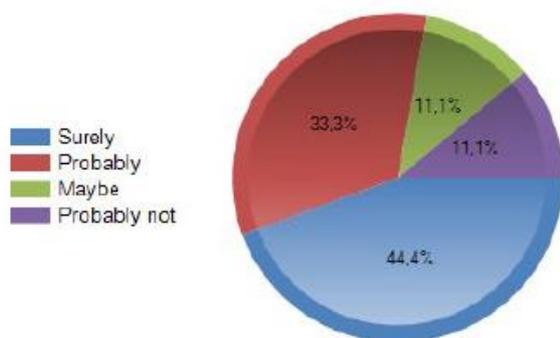


13. Will the content of this session be useful for you in the future?

	Effectifs	% Obs.
Surely	4	44,4%
Probably	3	33,3%
Maybe	1	11,1%
Probably not	1	11,1%
Not at all	0	0%
Total	9	100%

Réponses effectives : 9 Non-réponse(s) : 0

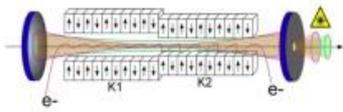
Taux de réponse : 100% Modalités les plus citées : Surely; Probably; Maybe; ...



3 Short Course 2: “FT-ICR for gas phase ion spectroscopy and structural characterization”

The Short Course 2 (SC2) was held at the Université Paris Sud, Orsay (France) in the period 5-7 November 2018. Tutorial lectures were held by scientists of the EU_FT-ICR_MS network, namely Guillaume van der Rest (CNRS-ORSA) and Philippe Maître (CNRS-ORSA). Instrument demos and use of the OPO/OPA lasers for experiments were done by Philippe Maître and Debora Scuderi (CNRS-ORSA). Estelle Loire (CNRS-ORSA) presented a session on data interpretation. All applications for the short course were accepted, with 8 applicants (3 male, 5 female) from 5 countries (Italy, Germany, Finland, Great-Britain and France). Overall satisfaction by participants as very good (85.7% Very satisfied; 14.3% Satisfied of the short course session as a whole). Announcement flyer and overall evaluation summary are presented below. The lectures and hands on presentations were published for public download on the open project website <http://eu-fticr-ms.eu/>.

3.1 SC2 Announcement and Program

 <p>Second short course of the EU_FT-ICR_MS network</p> <p><i>FT-ICR for gas phase ion spectroscopy and structural characterization</i></p> <p>November 5 – 7, 2018</p> <p>Université Paris Sud Building 201 P2 Orsay, France</p>	<p><u>Main features of the program</u></p> <p>Tutorial lectures</p> <ul style="list-style-type: none"> Principles of action spectroscopy for ion structures in FT-ICR instruments Applications for the structural characterization of ions Selecting conformers or isomers through ion mobility  <p>Hands on experiments</p> <ul style="list-style-type: none"> Ion activation with a IR free electron laser Ion activation with OPO/OPA table-top laser <p>Data processing and analysis</p> <ul style="list-style-type: none"> Data processing of action spectra measurements, comparison with simulations. <p><i>Attendants are encouraged to suggest the type of samples for which they would like to have hands on training.</i></p>	 <p>Registration and accomodation: The attendance to the short course is free for selected participants! <i>The EU_FT-ICR_MS will cover accomodation, registration and some travel fees.</i></p> <p>Download the application form on the EU_FT-ICR_MS web site (eu-ft-icr-ms.eu) and send it by email to: guillaume.van-der-rest@u-psud.fr before October 5th 2018.</p> <p>Selected applicants will receive notice of their acceptance to the short course on October 8th.</p> <p>Selection will be based on the number of applicants, the scientific project of the attendant, their knowledge in mass spectrometry.</p>
 <p>Location : <i>The Université Paris Sud science campus is located 25 km southwest of Paris. It can be reached by local train from both of Paris major airports as well as from the main line train stations (30 min to 1h30 travel time).</i></p>	 <p><i>This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731077 .</i></p>	
		

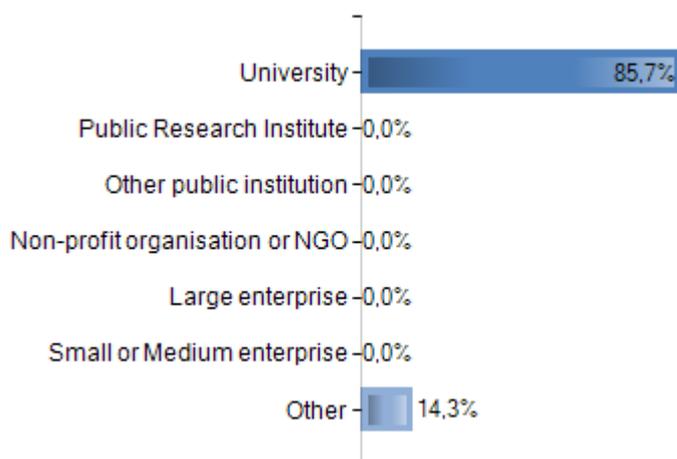
3.2 SC2 Evaluation

1. In which context are you presently employed or carrying your research?

	Effectifs	% Obs.
University	6	85,7%
Public Research Institute	0	0%
Other public institution	0	0%
Non-profit organisation or NGO	0	0%
Large enterprise	0	0%
Small or Medium enterprise	0	0%
Other	1	14,3%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : University; Other

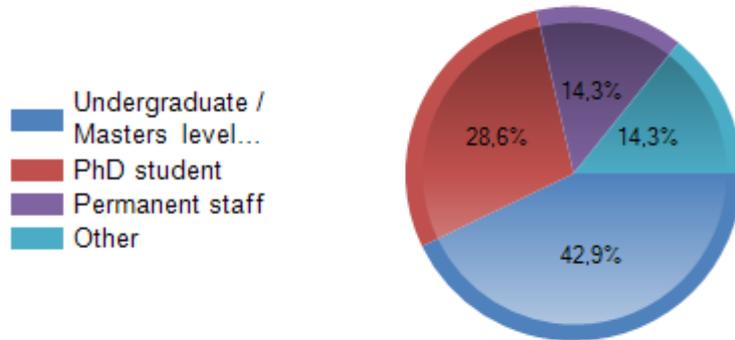


2. What is your current position type?

	Effectifs	% Obs.
Undergraduate / Masters level student	3	42,9%
PhD student	2	28,6%
Postdoctoral fellow	0	0%
Permanent staff	1	14,3%
Other	1	14,3%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Undergraduate / Masters level student; PhD student; Permanent staff; ...

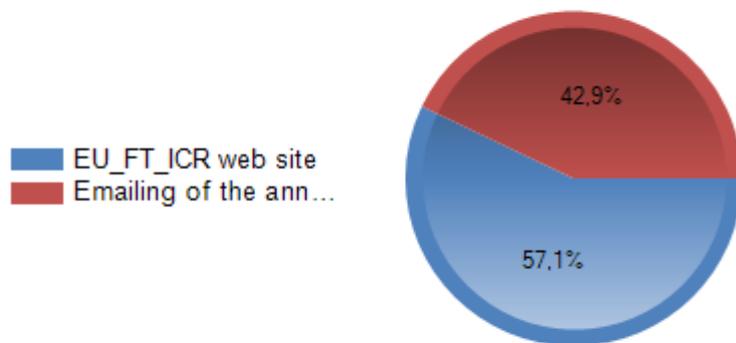


3. By which channels did you come to know about the workshop ?

	Effectifs	% Obs.
EU_FT_ICR web site	4	57,1%
Emailing of the announcement	3	42,9%
Twitter announcement	0	0%
Other	0	0%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalité la plus citée : EU_FT_ICR web site

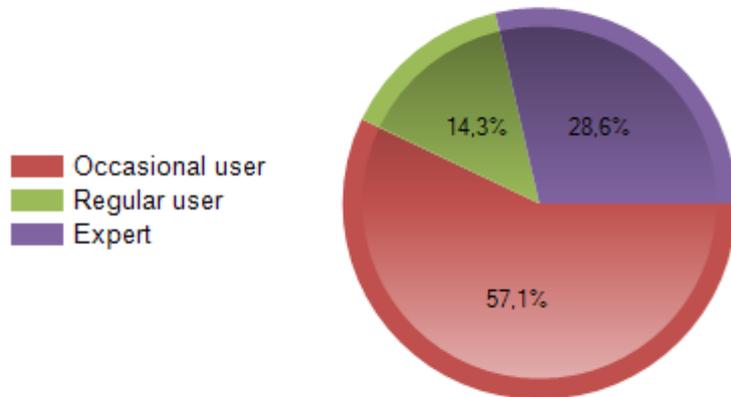


4. How would you rate your level in mass spectrometry when taking this course?

	Effectifs	% Obs.
Beginner	0	0%
Occasional user	4	57,1%
Regular user	1	14,3%
Expert	2	28,6%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalité la plus citée : Occasional user

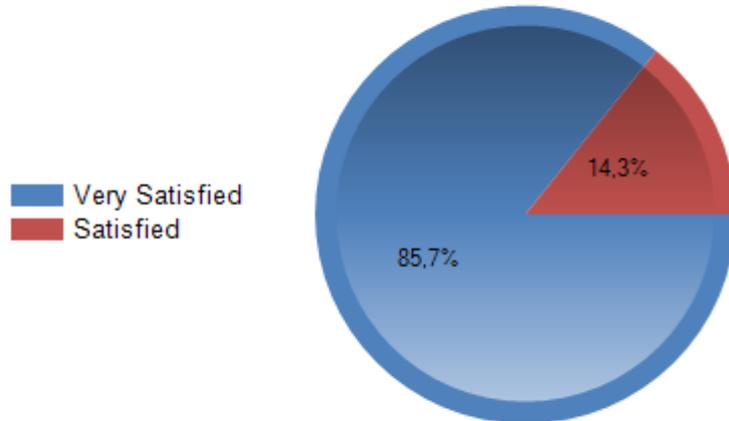


5. Registration process

	Effectifs	% Obs.
Very Satisfied	6	85,7%
Satisfied	1	14,3%
Neither Satisfied nor Dissatisfied	0	0%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Very Satisfied; Satisfied

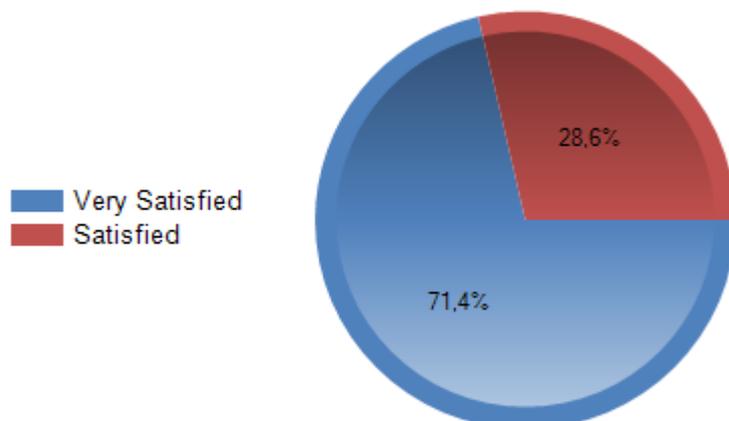


6. Travel to the site

	Effectifs	% Obs.
Very Satisfied	5	71,4%
Satisfied	2	28,6%
Neither Satisfied nor Dissatisfied	0	0%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Very Satisfied; Satisfied

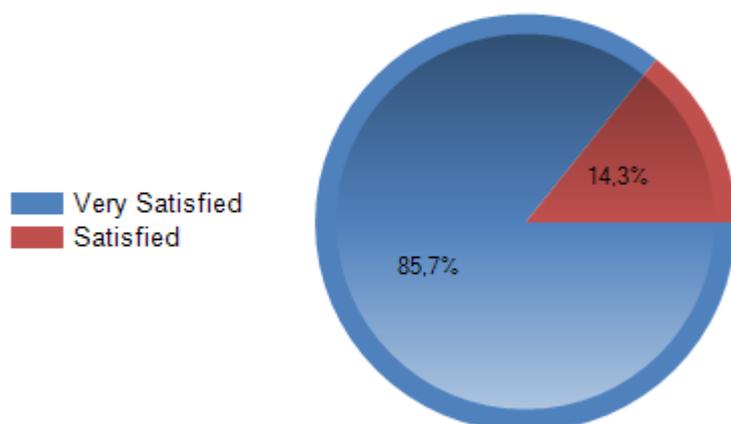


7. Accommodations

	Effectifs	% Obs.
Very Satisfied	6	85,7%
Satisfied	1	14,3%
Neither Satisfied nor Dissatisfied	0	0%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Very Satisfied; Satisfied

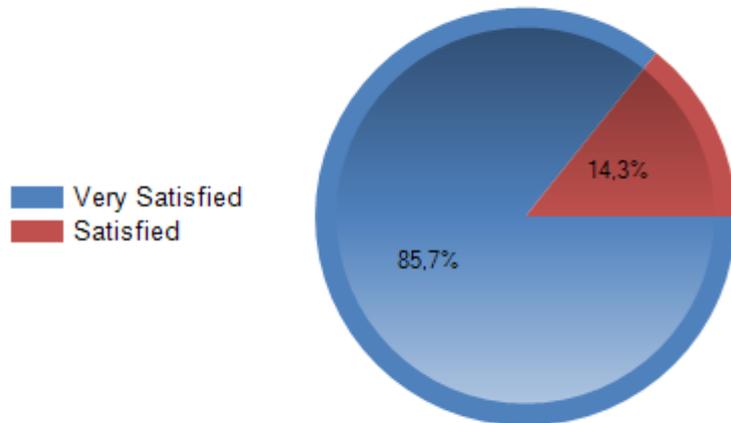


8. Access to the campus / laboratory

	Effectifs	% Obs.
Very Satisfied	6	85,7%
Satisfied	1	14,3%
Neither Satisfied nor Dissatisfied	0	0%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Very Satisfied; Satisfied

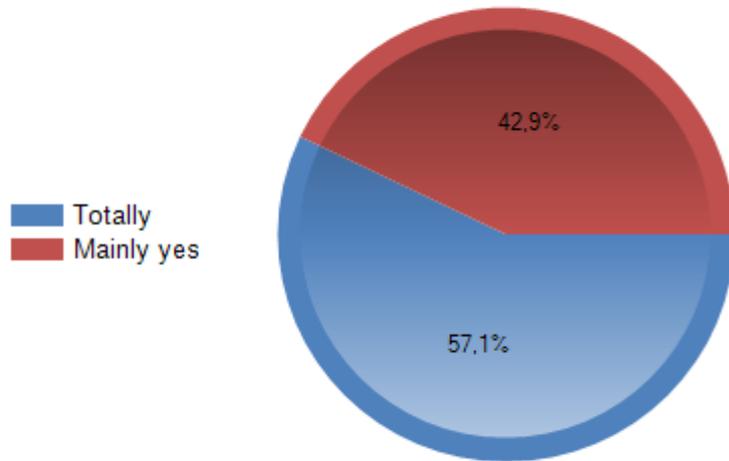


9. Was the level of the short courses adapted to your knowledge in mass spectrometry?

	Effectifs	% Obs.
Totally	4	57,1%
Mainly yes	3	42,9%
It depends	0	0%
Mainly not	0	0%
Not at all	0	0%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Totally; Mainly yes

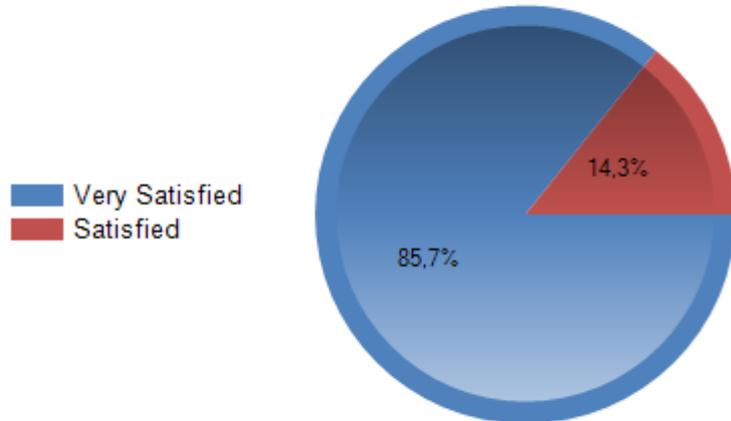


10. What is your satisfaction level for the short course session on a whole?

	Effectifs	% Obs.
Very Satisfied	6	85,7%
Satisfied	1	14,3%
Neither Satisfied nor Dissatisfied	0	0%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Very Satisfied; Satisfied

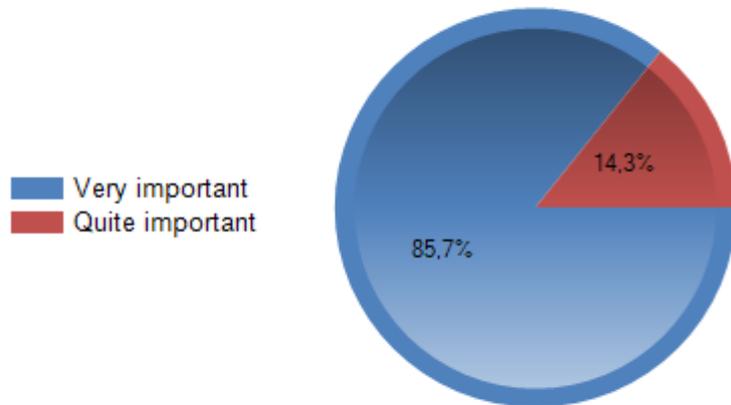


11. Was hands-on practical courses useful in the context of this short course?

	Effectifs	% Obs.
Very important	6	85,7%
Quite important	1	14,3%
Little importance	0	0%
No importance	0	0%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalité la plus citée : Very important

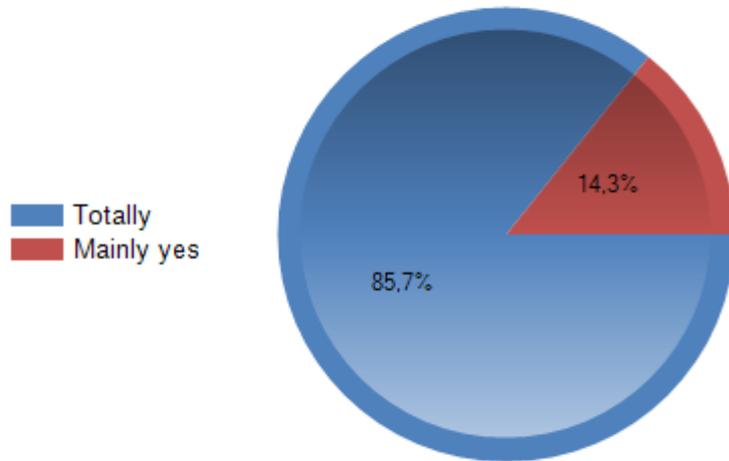


12. The themes that have been covered by the workshop where those as announced?

	Effectifs	% Obs.
Totally	6	85,7%
Mainly yes	1	14,3%
It depends	0	0%
Mainly not	0	0%
Not at all	0	0%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Totally; Mainly yes

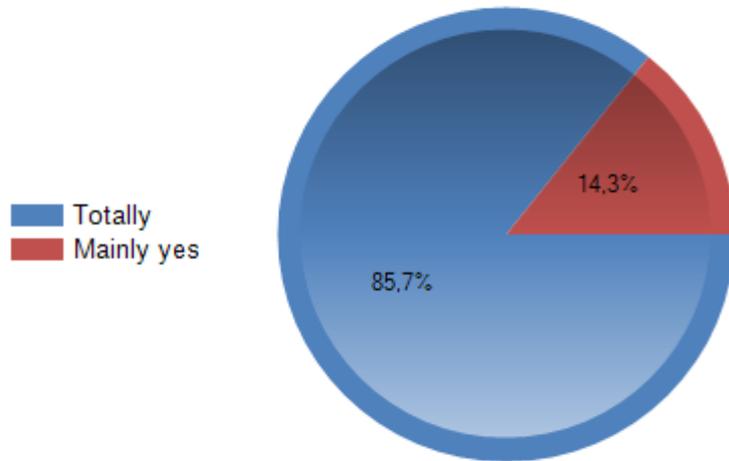


13. Lectures and interventions were adequate ?

	Effectifs	% Obs.
Totally	6	85,7%
Mainly yes	1	14,3%
It depends	0	0%
Mainly not	0	0%
Not at all	0	0%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Totally; Mainly yes

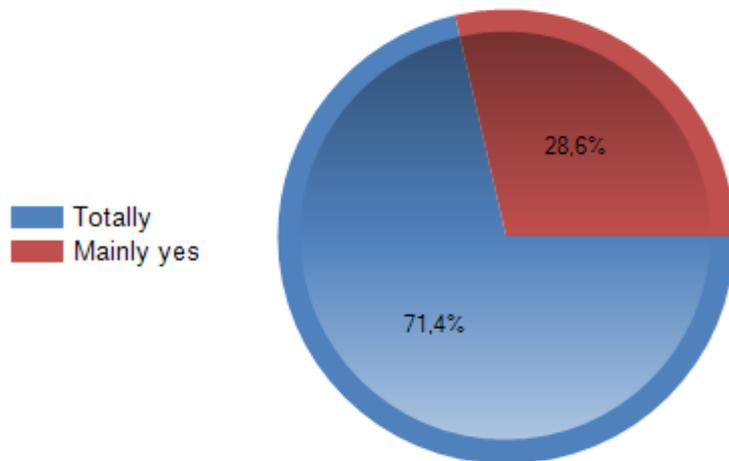


14. Was this session meeting your expectations?

	Effectifs	% Obs.
Totally	5	71,4%
Mainly yes	2	28,6%
It depends	0	0%
Mainly not	0	0%
Not at all	0	0%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Totally; Mainly yes

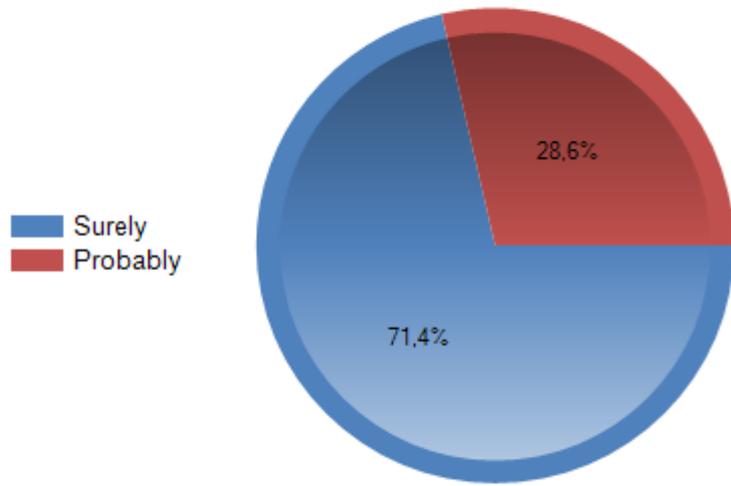


15. Will the content of this session be useful for you in the future?

	Effectifs	% Obs.
Surely	5	71,4%
Probably	2	28,6%
Maybe	0	0%
Probably not	0	0%
Not at all	0	0%
Total	7	100%

Réponses effectives : 7
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Surely; Probably

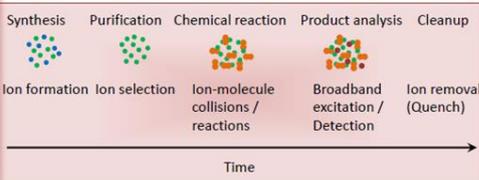


4 Short Course 3: “Ion-molecule reactions: fundamental and analytical aspects”

The Short Course 3 (SC3) was held at Sapienza Università di Roma, Roma (Italy) in the period 25-27 June 2019. Tutorial lectures were held by scientists of the EU_FT-ICR_MS network, namely Evgeny Nikolaev (MOSC), Simonetta Fornarini (ROMA) and Maria Elisa Crestoni (ROMA). Hands-on exercises were done by M. Elisa Crestoni and Annito Di Marzio (ROMA). Instrument demos and data interpretation were presented by Alessandro Maccelli, Davide Corinti and Barbara Chiavarino (ROMA). The lectures and hands on presentations are publicly available on the project website <http://eu-fticr-ms.eu/>. All applications for the short course were accepted, with 17 participants (12 male, 5 female) from 11 countries (France, Estonia, Spain, Portugal, Russia, Italy, Germany, Finland, Great-Britain, Slovenia, Serbia). Overall satisfaction by participants is very good (60% Very satisfied; 33.3% Satisfied of the short course session as a whole). Attendees consider that SC3 will surely (80%) or probably (6.7%) be useful for them in the future.

Announcement flyer, a group picture, and overall evaluation summary are presented below.

4.1 SC3 program and announcement flyer

 <p>Third short course of the EU_FT-ICR_MS network</p> <p><i>“Ion-molecule reactions: fundamental and analytical aspects”</i></p>  <p><i>Facoltà di Farmacia e Medicina</i> Dipartimento di Chimica e Tecnologie del Farmaco</p> <p>25-27 June 2019</p> 	<h3 style="text-align: center;">Program</h3> <p>Tutorial lectures</p> <ul style="list-style-type: none"> Principles of ion-molecule reactions in FT-ICR mass spectrometry Applications for identification of functional groups, structural features, physicochemical properties, counting active Hs, chiral differentiation, atom transfer reactions  <p>Hands on experiments</p> <ul style="list-style-type: none"> Kinetics of bimolecular reactions: single and multiple steps Equilibria: examples of ligand association/exchange reactions <p>Data processing and analysis</p> <ul style="list-style-type: none"> Data processing of kinetics and equilibrium measurements 	<h3 style="text-align: center;">Registration</h3>  <p>Attendance to the short course is free for all participants !</p> <p><i>The EU_FT-ICR_MS network will cover accomodation, registration and most of travel expenses.</i></p> <p>Please download the application form on the EU_FT-ICR_MS web site: eu-fticr-ms.eu and send it by email to: mariaelisa.crestoni@uniroma1.it before May 15th, 2019.</p> <p>Applications will be open till the course is fully registered and acceptance will be notified before May 20th, 2019.</p>  <p><i>This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 731077.</i></p>
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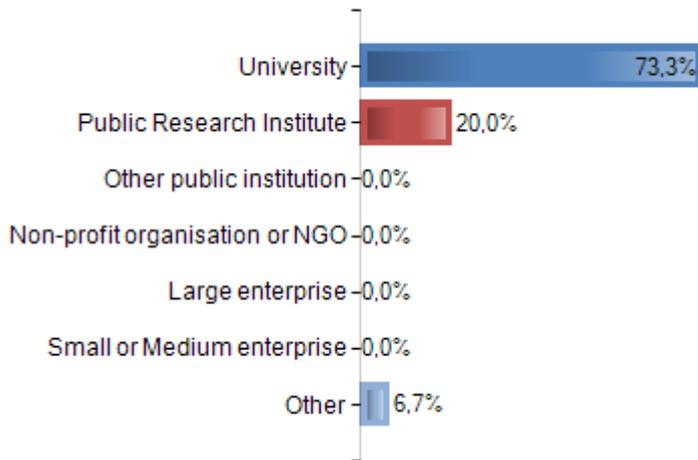
4.2 SC3 Evaluation

1. In which context are you presently employed or carrying your research?

	Effectifs	% Obs.
University	11	73,3%
Public Research Institute	3	20%
Other public institution	0	0%
Non-profit organisation or NGO	0	0%
Large enterprise	0	0%
Small or Medium enterprise	0	0%
Other	1	6,7%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : University; Public Research Institute; Other

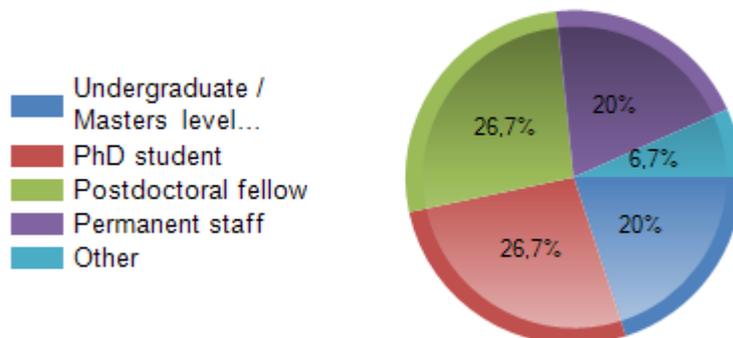


2. What is your current position type?

	Effectifs	% Obs.
Undergraduate / Masters level student	3	20%
PhD student	4	26,7%
Postdoctoral fellow	4	26,7%
Permanent staff	3	20%
Other	1	6,7%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : PhD student; Postdoctoral fellow; Undergraduate / Masters level student; ...

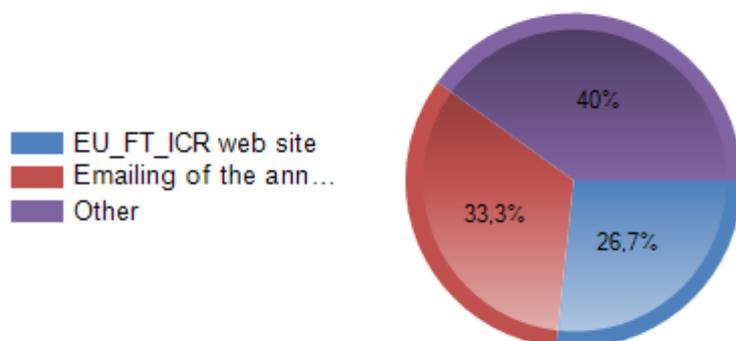


3. By which channels did you come to know about the workshop ?

	Effectifs	% Obs.
EU_FT_ICR web site	4	26,7%
Emailing of the announcement	5	33,3%
Twitter announcement	0	0%
Other	6	40%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalité la plus citée : Other

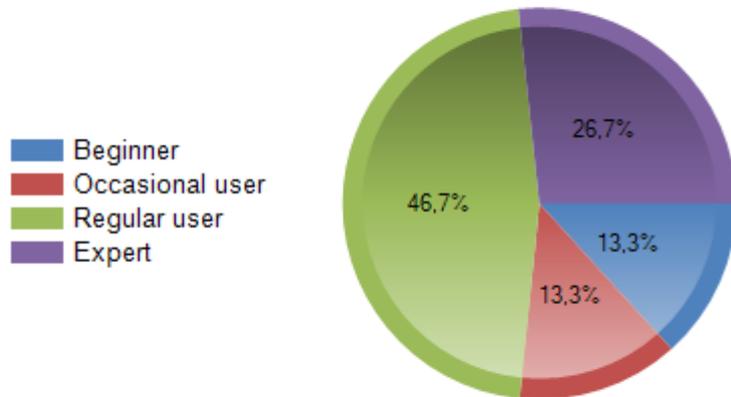


4. How would you rate your level in mass spectrometry when taking this course?

	Effectifs	% Obs.
Beginner	2	13,3%
Occasional user	2	13,3%
Regular user	7	46,7%
Expert	4	26,7%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalité la plus citée : Regular user

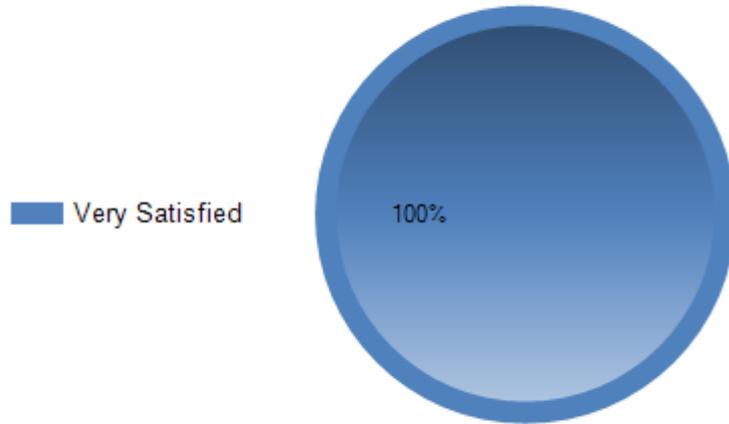


5. Registration process

	Effectifs	% Obs.
Very Satisfied	15	100%
Satisfied	0	0%
Neither Satisfied nor Dissatisfied	0	0%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalité la plus citée : Very Satisfied

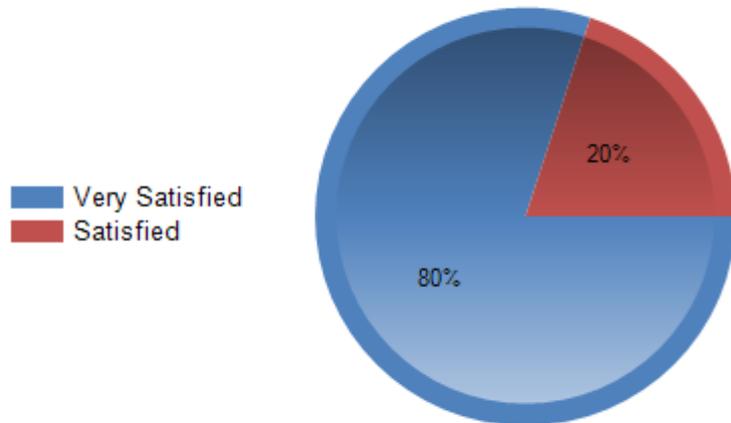


6. Travel to the site

	Effectifs	% Obs.
Very Satisfied	12	80%
Satisfied	3	20%
Neither Satisfied nor Dissatisfied	0	0%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Very Satisfied; Satisfied



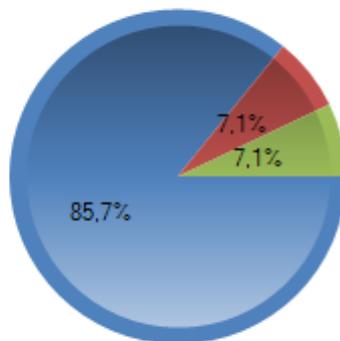
7. Accommodations

	Effectifs	% Rep.
Very Satisfied	12	85,7%
Satisfied	1	7,1%
Neither Satisfied nor Dissatisfied	1	7,1%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	14	100%

Réponses effectives : 14
Taux de réponse : 93,3%

Non-réponse(s) : 1
Modalités les plus citées : Very Satisfied; Satisfied; Neither Satisfied nor Dissatisfied

■ Very Satisfied
■ Satisfied
■ Neither Satisfied no...

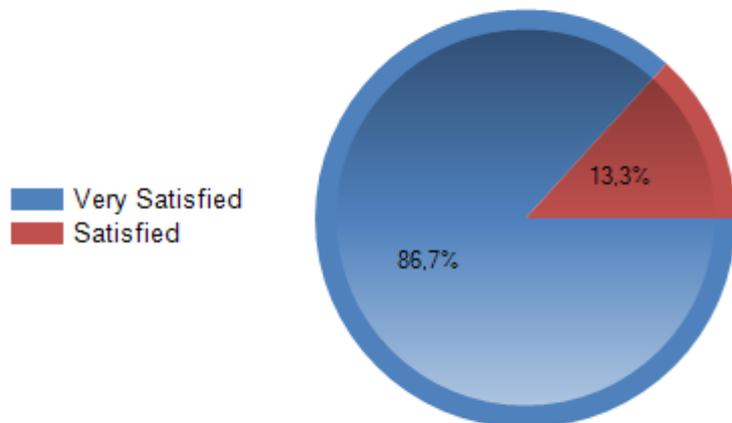


8. Access to the campus / laboratory

	Effectifs	% Obs.
Very Satisfied	13	86,7%
Satisfied	2	13,3%
Neither Satisfied nor Dissatisfied	0	0%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Very Satisfied; Satisfied

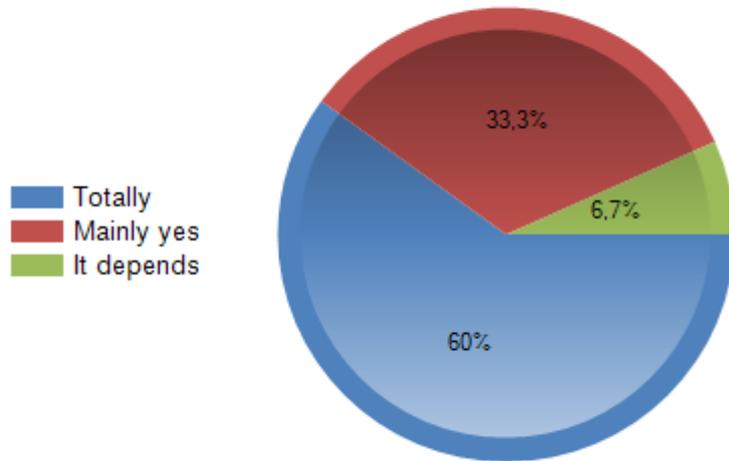


9. Was the level of the short courses adapted to your knowledge in mass spectrometry?

	Effectifs	% Obs.
Totally	9	60%
Mainly yes	5	33,3%
It depends	1	6,7%
Mainly not	0	0%
Not at all	0	0%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Totally; Mainly yes; It depends

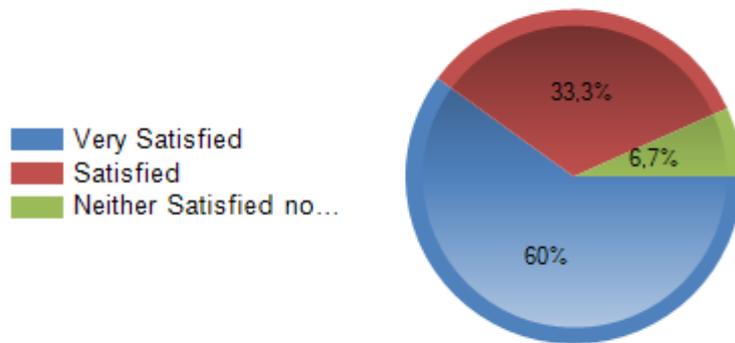


10. What is your satisfaction level for the short course session on a whole?

	Effectifs	% Obs.
Very Satisfied	9	60%
Satisfied	5	33,3%
Neither Satisfied nor Dissatisfied	1	6,7%
Dissatisfied	0	0%
Very Dissatisfied	0	0%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Very Satisfied; Satisfied; Neither Satisfied nor Dissatisfied

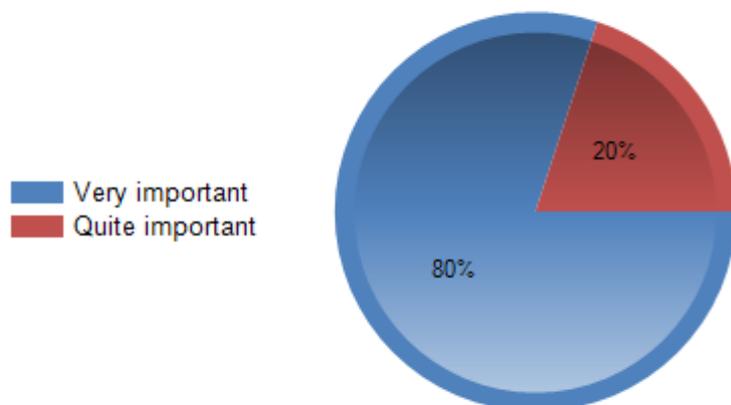


11. Was hands-on practical courses useful in the context of this short course?

	Effectifs	% Obs.
Very important	12	80%
Quite important	3	20%
Little importance	0	0%
No importance	0	0%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalité la plus citée : Very important

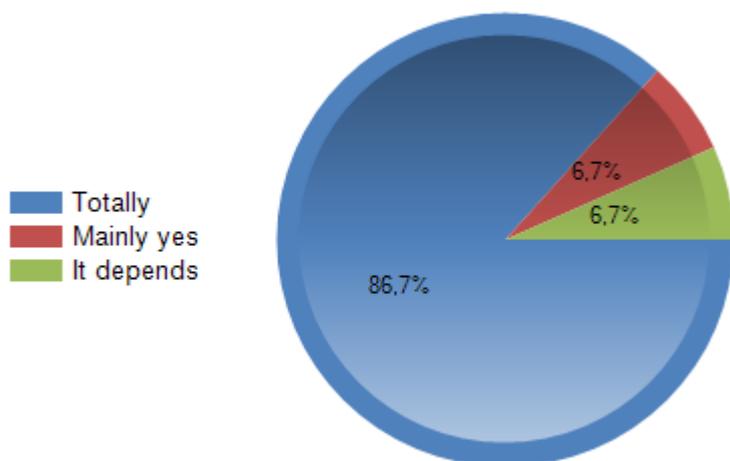


12. The themes that have been covered by the workshop where those as announced?

	Effectifs	% Obs.
Totally	13	86,7%
Mainly yes	1	6,7%
It depends	1	6,7%
Mainly not	0	0%
Not at all	0	0%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Totally; Mainly yes; It depends

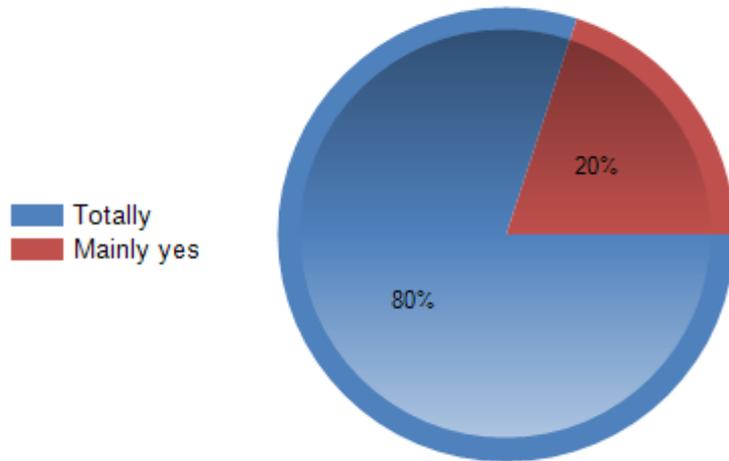


13. Lectures and interventions were adequate ?

	Effectifs	% Obs.
Totally	12	80%
Mainly yes	3	20%
It depends	0	0%
Mainly not	0	0%
Not at all	0	0%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Totally; Mainly yes

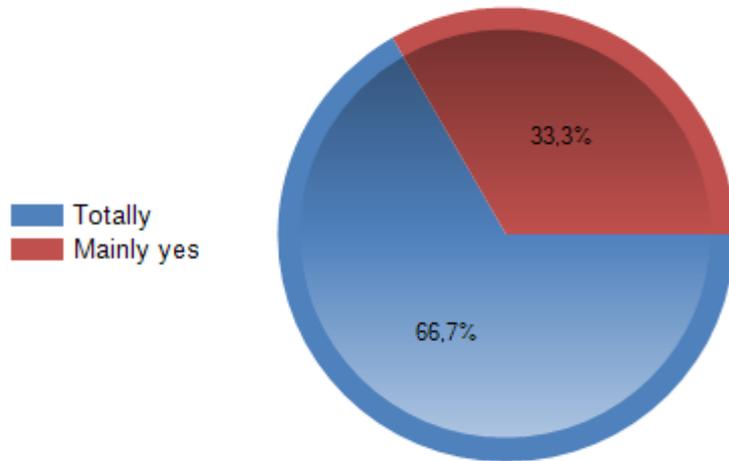


14. Was this session meeting your expectations?

	Effectifs	% Obs.
Totally	10	66,7%
Mainly yes	5	33,3%
It depends	0	0%
Mainly not	0	0%
Not at all	0	0%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Totally; Mainly yes

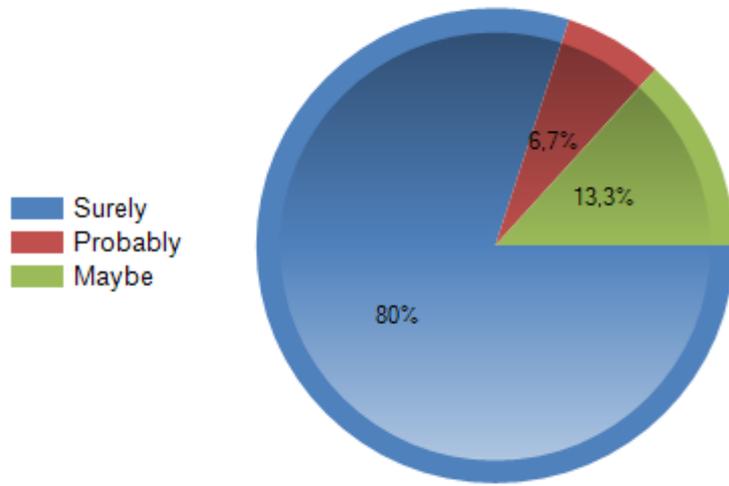


15. Will the content of this session be useful for you in the future?

	Effectifs	% Obs.
Surely	12	80%
Probably	1	6,7%
Maybe	2	13,3%
Probably not	0	0%
Not at all	0	0%
Total	15	100%

Réponses effectives : 15
Taux de réponse : 100%

Non-réponse(s) : 0
Modalités les plus citées : Surely; Maybe; Probably



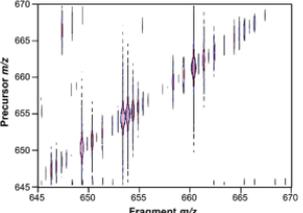
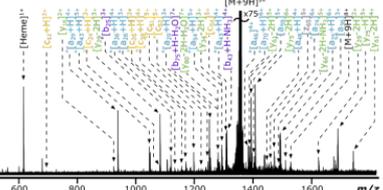
5 Short Course 4: “High resolution tandem mass spectrometry of biomolecules”

Short Course 4 (SC4) was held at the University of Warwick, Warwick (UK) in the period 22-23 August 2019.

Tutorial lectures were held by Prof. P. O'Connor, Prof. E. Nikolaev, and by the research team of the Ion Cyclotron Resonance Laboratory: Dr. M. Barrow and Dr. C. Wootton. Tandem MS lab classes with demos and hands-on exercises were done by P. O'Connor, C. Wootton and Y. Lam. After all administrative actions, 10 participants (M to F ratio: 30:70) from 6 European countries were selected for the course. All participants had experience in mass-spectrometry and some of them had experience in FTICR MS as well. Nevertheless, attendees expressed their satisfaction and consider the event to be (very) useful for their future. Announcement flyer is presented below along with a picture of the lab sessions and overall evaluation summary.

The lectures and hands on presentations were published for public download on the open project website <http://eu-fticr-ms.eu/>.

5.1 SC5 program and announcement flyer

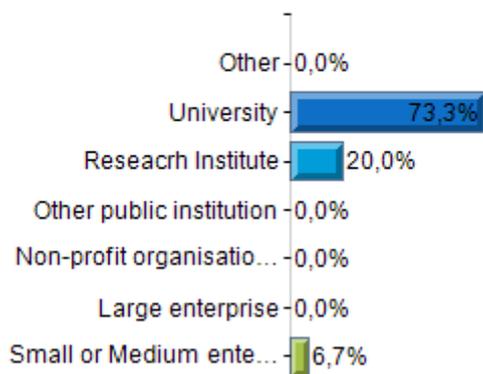
<p>4th Short Course of the EU FT-ICR MS Network</p> <p>High Resolution Tandem Mass Spectrometry of Biomolecules</p>	<p>Course Overview</p>	<p>Application</p>
<p>When & Where</p> <p>21st - 23rd August 2019</p> <p>Ion Cyclotron Resonance Laboratory Millburn House, University of Warwick Coventry CV4 7HS United Kingdom</p> 	<p>Topics:</p> <ul style="list-style-type: none"> • Fundamentals of FT-ICR MS • Fundamentals of tandem MS (CAD, IRMPD, UVPD, ExD) • Data Analysis of tandem MS • Applications of tandem MS 	<p>For more information and application to the course, please visit:</p> <p>https://eu-fticr-ms.eu/</p> <p>No PARTICIPATION FEE! Accommodation, meals, and social program included</p>
<p>Local Organisation</p> <p>Prof. Peter O'Connor</p> <p>Contact: p.oconnor@warwick.ac.uk</p>	<p>2DMS IRMPD spectrum of tryptic digested biomolecule:</p> 	<p>Up to 10 applicants will be selected by the scientific committee on the basis of applications</p>
 	<p>UVPD spectrum of Cytochrome C:</p>  <p>Content:</p> <ul style="list-style-type: none"> • Tutorial lectures, Instrument demos, Hands-on exercises, and Data analysis <p>Speakers:</p> <p>P. B. O'Connor E. N. Nikolaev M. P. Barrow C. A. Wootton</p>	<p>Deadline for Applications: July 22nd 2019</p> <p>More information about Prof. O'Connor research group:</p> <p>https://warwick.ac.uk/fac/sci/chemistry/research/oconnor/oconnorgroup</p>  <p>This project has received funding from the European Union's Horizon 2020 research and Innovation programme under grant agreement No 731077</p>



5.2 SC4 evaluation

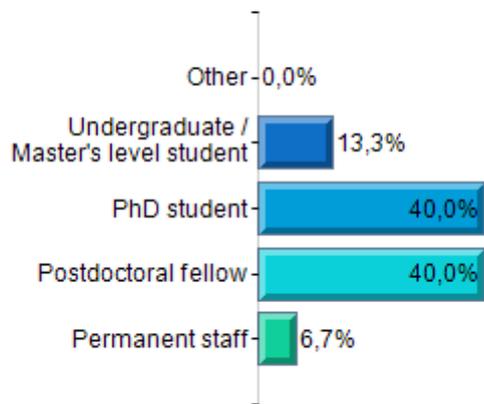
1. In which context are you presently employed or carrying your research?

Response rate: 93.8%



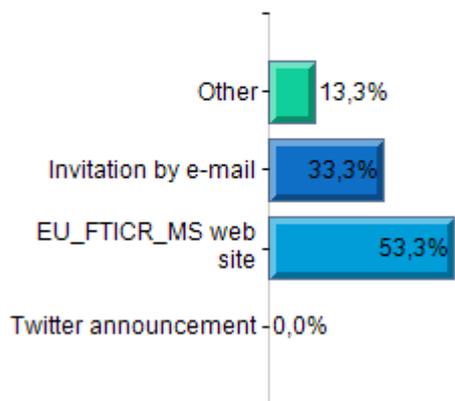
3. What is your current position type?

Response rate: 93.8%



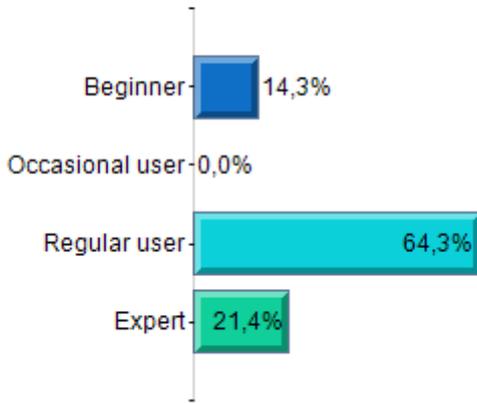
5. By which channels did you come to know about the workshop?

Response rate: 93.8%



7. How would you rate your level in mass spectrometry when taking this course?

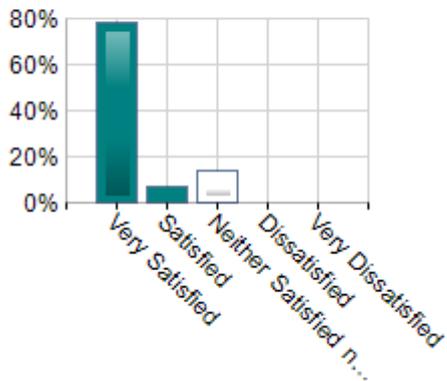
Response rate: 87.5%



9. Registration process

Response rate: 87.5%

Mean = 4.64 Median = 5.00 Std deviation = 0.74
 Min = 3.00 Max = 5.00

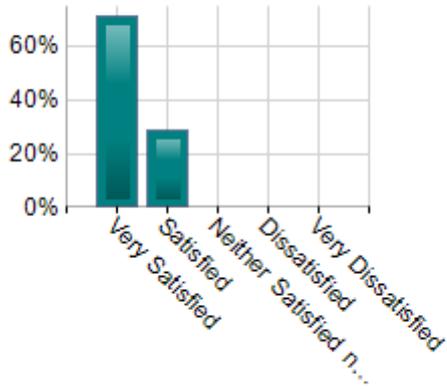


10. Travel to the site

Response rate: 87.5%

Mean = 4.71 Median = 5.00 Std deviation = 0.47

Min = 4.00 Max = 5.00

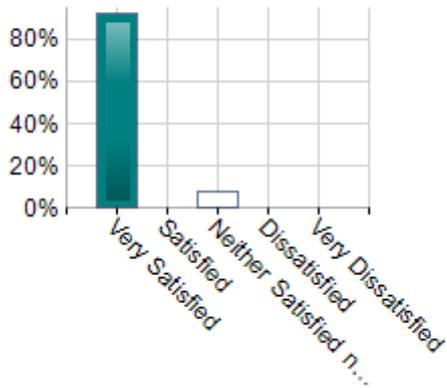


11. Accomodations

Response rate: 81.3%

Mean = 4.85 Median = 5.00 Std deviation = 0.55

Min = 3.00 Max = 5.00

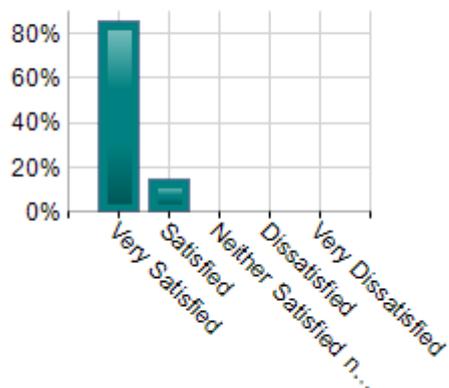


12. Access to the campus / laboratory

Response rate: 87.5%

Mean = 4.86 Median = 5.00 Std deviation = 0.36

Min = 4.00 Max = 5.00

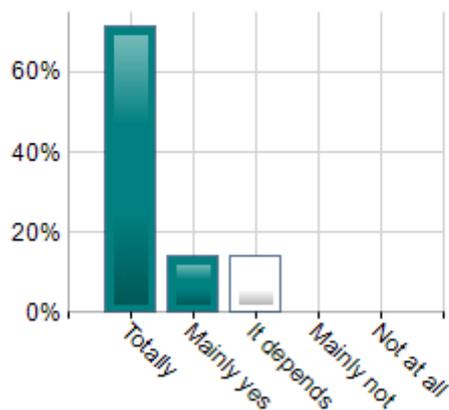


14. Was the level of the short courses adapted to your knowledge in mass spectrometry?

Response rate: 87.5%

Mean = 4.57 Median = 5.00 Std deviation = 0.76

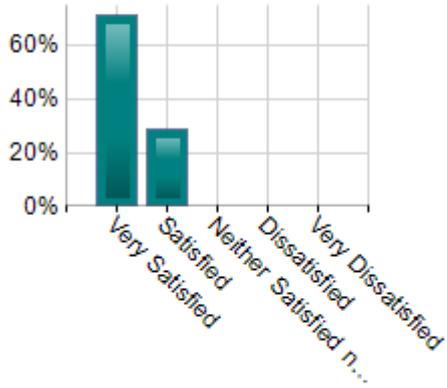
Min = 3.00 Max = 5.00



15. What is your satisfaction level for the short course session on a whole?

Response rate: **87.5%**

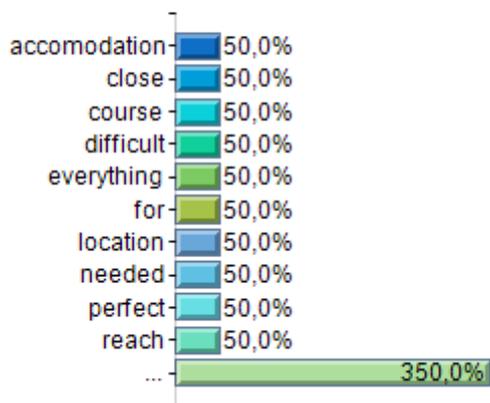
Mean = **4.71** Median = **5.00** Std deviation = **0.47**
 Min = **4.00** Max = **5.00**



13. Remarks and comments

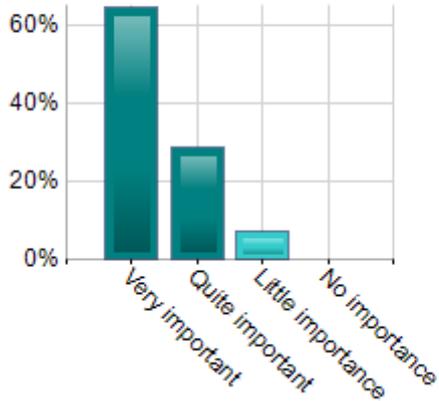
Please include here all the general comments on the location/environment

Response rate: **12.5%**



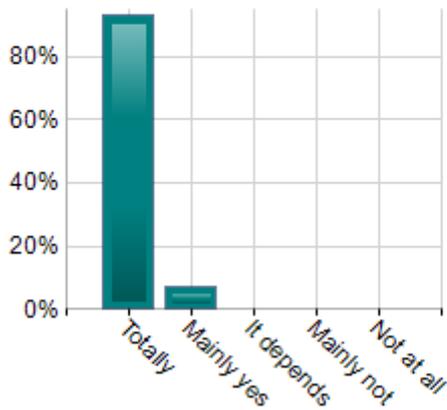
16. Was hands-on practical courses useful in the context of this short course?

Response rate: 87.5%
 Mean = 3.57 Median = 4.00 Std deviation = 0.65
 Min = 2.00 Max = 4.00



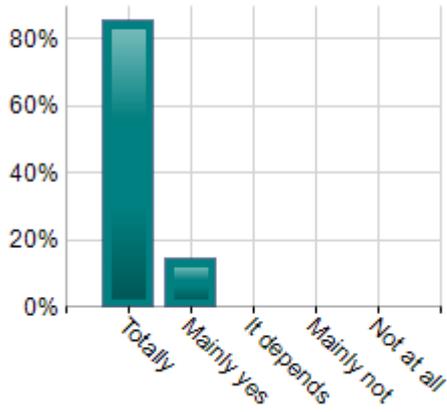
17. The themes that have been covered by the workshop where those as announced?

Response rate: 87.5%
 Mean = 4.93 Median = 5.00 Std deviation = 0.27
 Min = 4.00 Max = 5.00



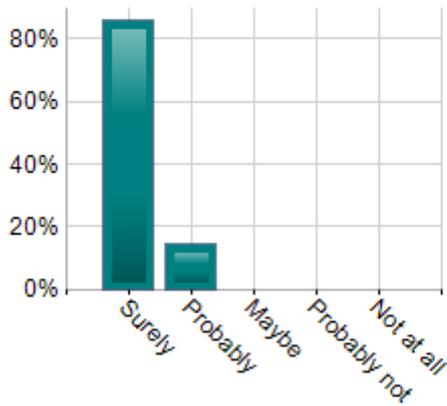
18. Lectures and short talks were adequate ?

Response rate: 87.5%
 Mean = 4.86 Median = 5.00 Std deviation = 0.36
 Min = 4.00 Max = 5.00



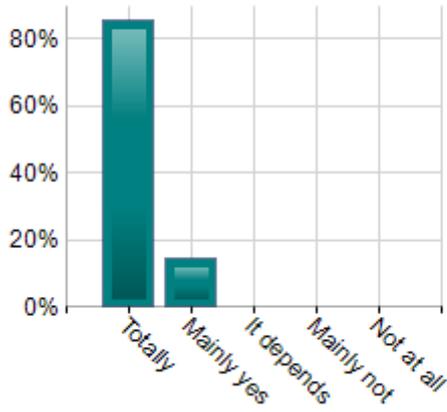
20. Will the content of this session be useful for you in the future?

Response rate: 87.5%
 Mean = 4.86 Median = 5.00 Std deviation = 0.36
 Min = 4.00 Max = 5.00



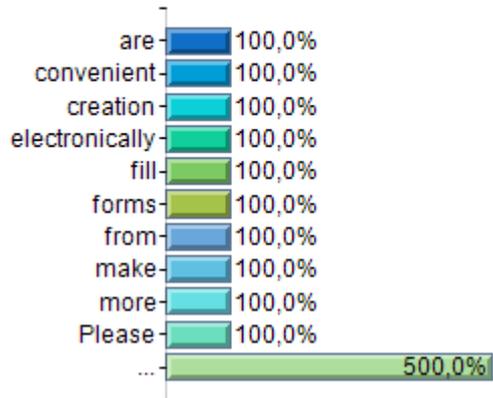
19. Was this session meeting your expectations?

Response rate: 87.5%
 Mean = 4.86 Median = 5.00 Std deviation = 0.36
 Min = 4.00 Max = 5.00



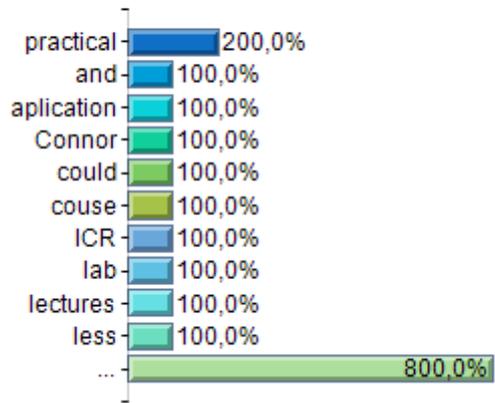
21. Do you have anything to suggest or propose for the forthcoming events?

Response rate: 6.3%



22. Other comments on the short courses:

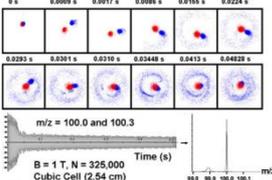
Response rate: 6.3%



6 Short course 5: “Basics of FT-ICR: dynamic harmonization and computer simulation”

Short Course 5 (SC5) was held at the Skolkovo Institute of Science and Technology (Skoltech), Moscow (Russia) in the period 10-12 October 2019. Tutorial lectures were held by Professor E. Nikolaev and by the research team of Mass Spectrometry Laboratory: assistant professor Yury Kostyukevich, senior research scientist Gleb Vladimirov, research scientist Alexander Zhrebker and PhD students Petr Borisovets and Anton Lioznov. Instrument demos and hands-on exercises were done by Oleg Kharybin and Alexander Zhrebker. Computer labs were organized by Petr Borisovets and Gleb Vladimirov. After all administrative procedures 20 participants (9 females, 11 male; M to F ratio: 55:45) from 6 countries were selected for the course. All participants had experience in mass-spectrometry and some of them had experience in FTICR MS as well. Nevertheless, attendees expressed their satisfaction and consider the event probably to be useful for their future. Announcement flyer is presented below. The lectures and hands on presentations were published for public download on the open project website <http://eu-fticr-ms.eu/>.

6.1 SC5 program and announcement flyer

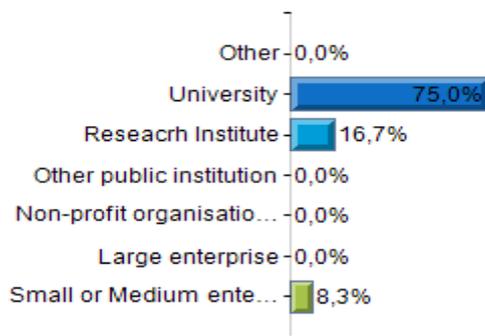
<p>5th Short Course of the EU FT-ICR MS Network</p> <p>Basics of FT-ICR: dynamic harmonization and computer simulation</p>	<p>Course Overview</p> <p>Topics:</p> <ul style="list-style-type: none"> ✓ Fundamentals of FT-ICR MS ✓ Dynamic harmonization ✓ Simulation of ion motion ✓ Advanced electronics for FT-ICR ✓ Application of PIC-code <p>The dynamically harmonized ICR cell</p>  <p>X-Y projection of ion clouds and corresponding FT-ICR data processing</p>  <p>Content:</p> <ul style="list-style-type: none"> ✓ Tutorial lectures, Instrument demos, Hands-on exercises, Computer lab, Data analysis 	<p>Application Details</p> <p>For more information and application to the course, please visit:</p> <p>https://eu-fticr-ms.eu/</p> <p>No PARTICIPATION FEE! Accommodation, travel, meals, and social program included</p> <p>Up to 10 applicants will be selected by the scientific committee</p> <p>Deadline for Applications: August 31st 2019</p> <p>Link to the Prof. Nikolaev Lab: https://www.skoltech.ru/massspeclab/</p>
<p>Venue and dates</p> <p>10th-12th October 2019</p> <p>Mass Spectrometry Lab, CDISE CREI, Skolkovo Institute of Science and Technology Nobelya 3 str., Moscow, 121205, Russia</p> 	 <p>HORIZON 2020</p> <p>This project has received funding from the EU Horizon 2020 research and Innovation program under grant agreement No 731077</p>	

6.2 SC5 evaluation

EU_FTICR_MS Short Course Participant Evaluation

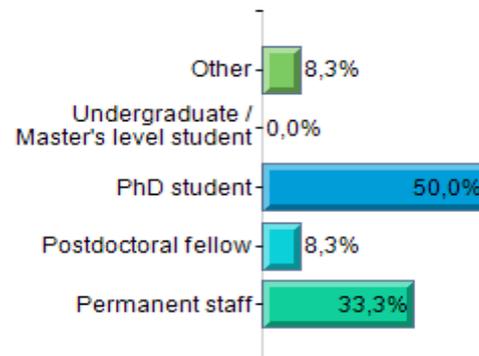
1. In which context are you presently employed or carrying your research?

Response rate: 100.0%



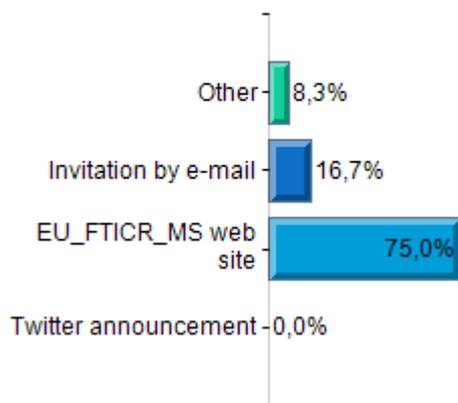
3. What is your current position type?

Response rate: 100.0%



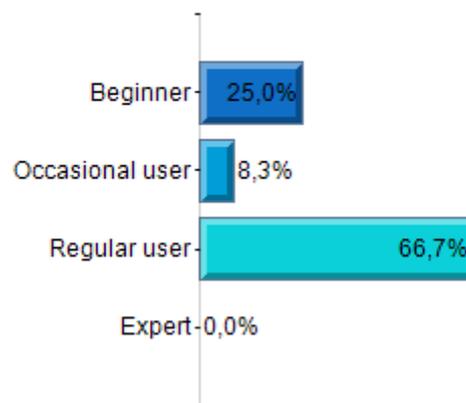
5. By which channels did you come to know about the workshop?

Response rate: 100.0%



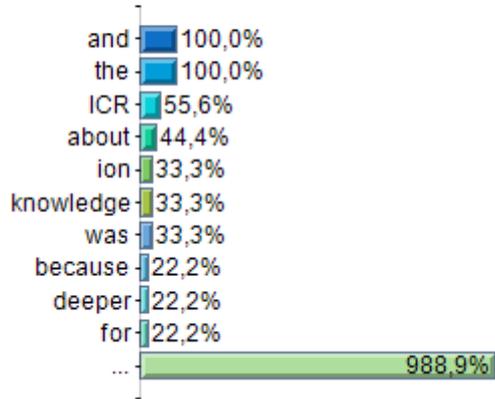
7. How would you rate your level in mass spectrometry when taking this course?

Response rate: 100.0%



8. What were your expectations from this short course?

Response rate: 75.0%

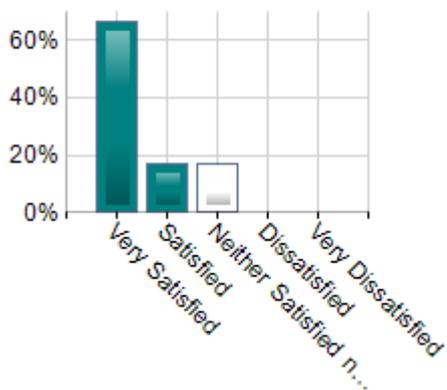


9. Registration process

Response rate: 100.0%

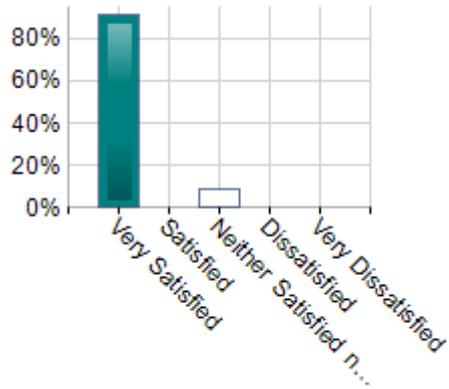
Mean = 4.50 Median = 5.00 Std deviation = 0.80

Min = 3.00 Max = 5.00



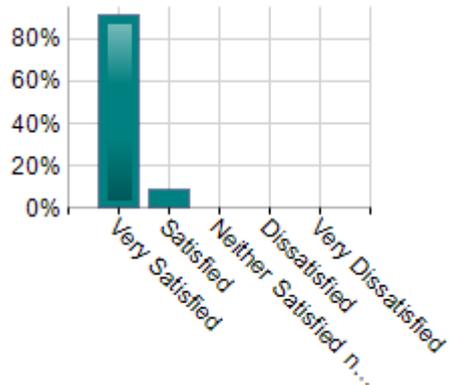
10. Travel to the site

Response rate: 91.7%
 Mean = 4.82 Median = 5.00 Std deviation = 0.60
 Min = 3.00 Max = 5.00



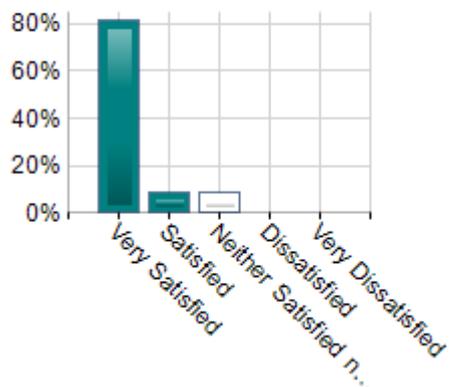
11. Accomodations

Response rate: 91.7%
 Mean = 4.91 Median = 5.00 Std deviation = 0.30
 Min = 4.00 Max = 5.00



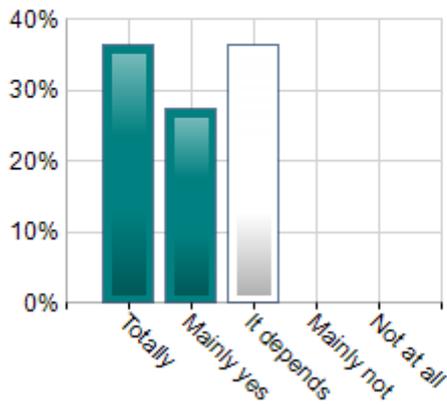
12. Access to the campus / laboratory

Response rate: 91.7%
 Mean = 4.73 Median = 5.00 Std deviation = 0.65
 Min = 3.00 Max = 5.00



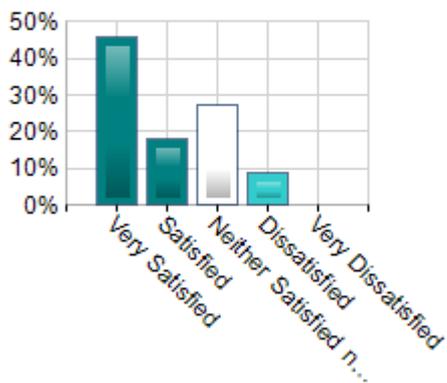
14. Was the level of the short courses adapted to your knowledge in mass spectrometry?

Response rate: **91.7%**
 Mean = **4.00** Median = **4.00** Std deviation = **0.89**
 Min = **3.00** Max = **5.00**



15. What is your satisfaction level for the short course session on a whole?

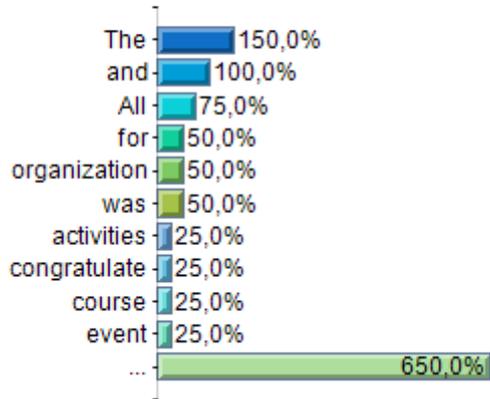
Response rate: **91.7%**
 Mean = **4.00** Median = **4.00** Std deviation = **1.10**
 Min = **2.00** Max = **5.00**



13. Remarks and comments

Please include here all the general comments on the location /environment

Response rate: 33.3%

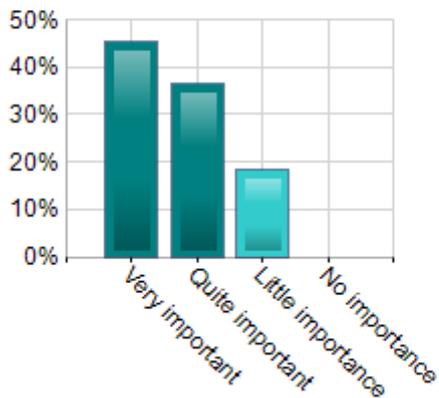


16. Was hands-on practical courses useful in the context of this short course?

Response rate: 91.7%

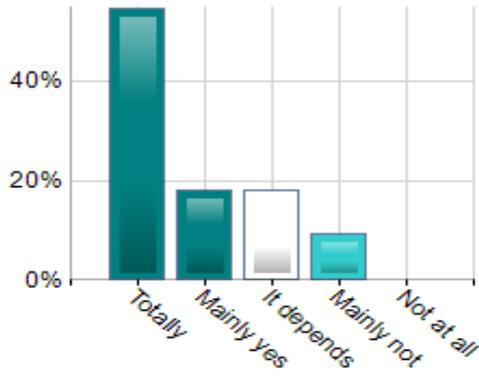
Mean = 3.27 Median = 3.00 Std deviation = 0.79

Min = 2.00 Max = 4.00



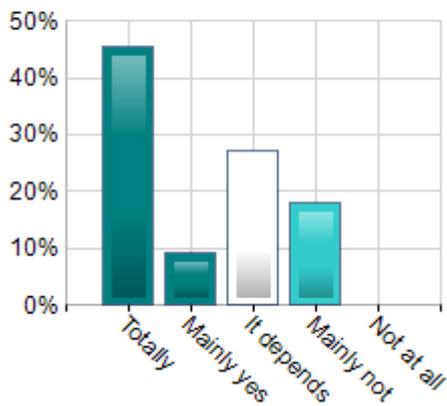
17. The themes that have been covered by the workshop where those as announced?

Response rate: **91.7%**
 Mean = **4.18** Median = **5.00** Std deviation = **1.08**
 Min = **2.00** Max = **5.00**



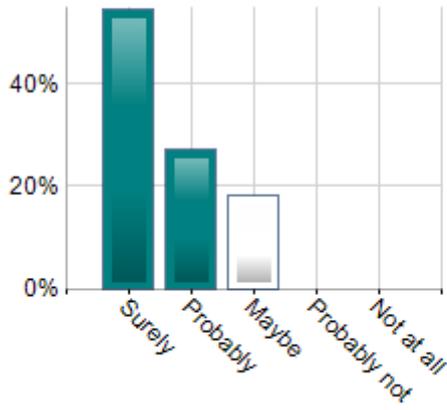
18. Lectures and interventions were adequate ?

Response rate: **91.7%**
 Mean = **3.82** Median = **4.00** Std deviation = **1.25**
 Min = **2.00** Max = **5.00**



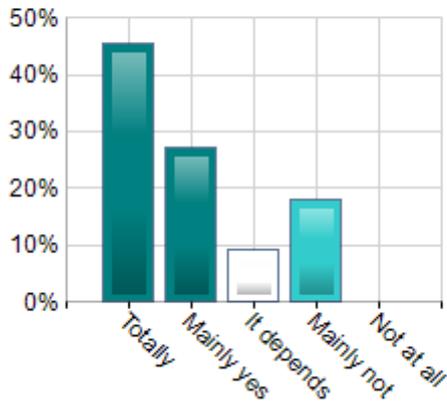
20. Will the content of this session be useful for you in the future?

Response rate: **91.7%**
 Mean = **4.36** Median = **5.00** Std deviation = **0.81**
 Min = **3.00** Max = **5.00**



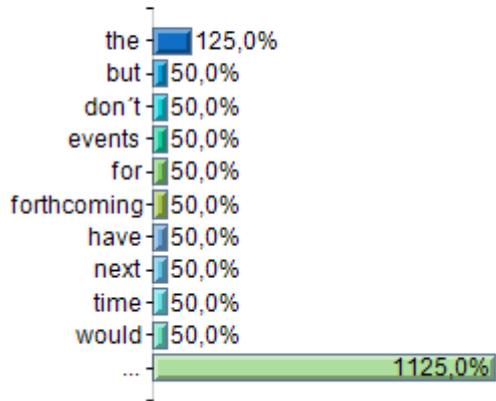
19. Was this session meeting your expectations?

Response rate: **91.7%**
 Mean = **4.00** Median = **4.00** Std deviation = **1.18**
 Min = **2.00** Max = **5.00**



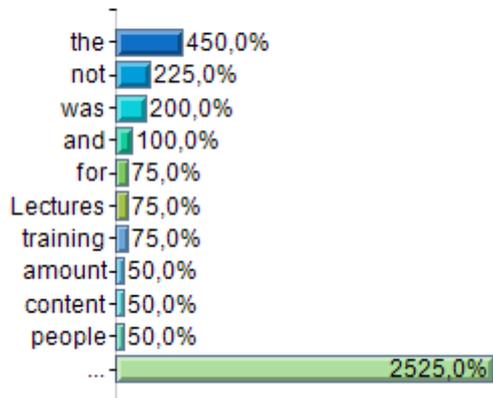
21. Do you have anything to suggest or propose for the forthcoming events?

Response rate: 33.3%



22. Other comments on the short courses:

Response rate: 33.3%

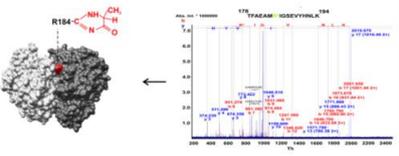
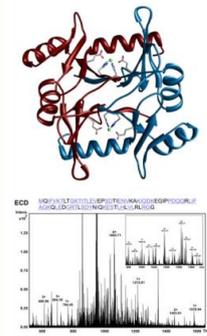


7 Short course 6: “Mapping post-translational modifications through FT-ICR”

Short Course 6 (SC6) was originally planned to be held at the Faculdade de Ciências - Universidade de Lisboa, Lisbon (Portugal) on 11-13 March 2020 (M27).

SC6 has been postponed to M45 (Sept 2021) due to COVID19 pandemic restrictions.

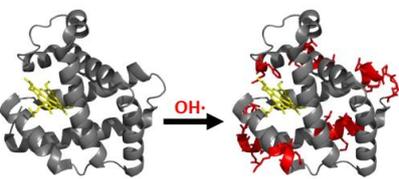
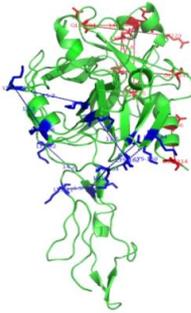
The previous announcement flyer is presented below.

<p>EU FT-ICR MS 6th Short Course</p> <p>Mapping post-translational modifications through FT-ICR</p>	<p>Course overview</p> <p>This course will cover the analysis and mapping of protein post-translational modifications using FT-ICR mass spectrometry</p>  <p>Specific topics include:</p> <ul style="list-style-type: none"> Sample preparation Ionization Top-down MS Fragmentation methods Sequence analysis 	<p>Tutorial lectures Instrument demos Hands-on exercises Computational data analysis</p>  <p>Faculty</p> <ul style="list-style-type: none"> Carlos CORDEIRO Peter O'CONNOR Petr NOVAK Roman ZUBAREV
<p>Where and when</p> <p>LISBOA, 11 -13 March 2020</p> <p>Faculdade de Ciências Universidade de Lisboa, Portugal ciencias.ulisboa.pt</p>  <p>Contacts: Carlos Cordeiro cacordeiro@fc.ul.pt</p> <p>Marta Sousa Silva mfsilva@fc.ul.pt</p>	<p>NO PARTICIPATION FEE!</p> <p>Travel, accommodation, meals and social program included</p> <p>Up to 10 applicants will be selected by the Scientific Committee</p>	<p>Application: www.eu-fticr-ms.eu</p> <p>DEADLINE FOR APPLICATIONS: January 20th 2020</p>  <p>This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731077</p>

8 Short Course 7: “Structural Proteomics: analysis of protein surface accessibility by top down mass spectrometry”

Short Course 7 (SC7) was held at the Institute of Microbiology, BioCeV, The Czech Academy of Sciences, Prague (Czech Republic) on 16-19 August 2020 (M32). The sessions include tutorial lectures, instrument demos, hands-on exercises, computer lab and data analysis and interpretation. Time was split between theoretical instruction and practical exercises on the analysis of protein surface accessibility using mass spectrometry. Tutorial lectures were held by Prof. P. Novak, Petr Man, Ales Hnizda, from IMIC, and by Prof. P. O'Connor, from University of Warwick, UK. Instrument demos and hands-on exercises were done by Petr Halada, Pavla Vankova, Dmitry Loginov, Petr Pompach, Daniel Kavan, Zdenek Kukacka, Jan Fiala, Lukas Fojtik, all from IMIC. After all administrative actions, 12 participants (M to F ratio: 4:8) from 9 European countries were selected for the course. All participants had experience in mass-spectrometry and some of them had experience in FTICR MS as well. Nevertheless, attendees expressed their satisfaction and consider the event useful for their future. Announcement flyer, group pictures, and overall evaluation summary are presented below. The lectures and hands on presentations were published for public download on the open project website <http://eu-fticr-ms.eu/>.

8.1 SC7 program and announcement flyer

<p>EU FT-ICR MS 7th Short Course</p> <p>Structural Proteomics: Analysis of protein surface accessibility by Top Down mass spectrometry</p> <p>PRAGUE, 16 - 19 August 2020</p> <p>Institute of Microbiology The Czech Academy of Sciences https://mbucas.cz/en/</p>	<p>Course overview</p> <p>This course will cover the analysis and mapping of protein landscape using FT-ICR mass spectrometry</p>  <p>Specific topics include:</p> <ul style="list-style-type: none"> Sample preparation Ionization Protein covalent labeling Data analysis 	<p>Tutorial lectures Instrument demos Hands-on exercises Computational data analysis</p>  <p>Faculty</p> <ul style="list-style-type: none"> Petr NOVAK Peter O'CONNOR Petr MAN
<p>Centrum BIOCEV Vestec, Prumyslova 595, Czech Republic</p> 	<p>NO PARTICIPATION FEE! Travel, accommodation, meals and social program included</p> <p>Up to 10 applicants will be selected by the Scientific Committee</p>	<p>Application: www.eu-fticr-ms.eu</p> <p>DEADLINE FOR APPLICATIONS: July 13th 2020</p>  <p>This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731077</p>
<p>Contacts: Petr Novak pnovak@biomed.cas.cz Pavla Kramlova pavla.kramlova@biomed.cas.cz</p>   		



8.2 SC7 evaluation

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9 Short Course 8: “Advanced methods for MS imaging with in situ identification using FT-ICR”

Short Course 8 (SC8) was originally planned to be held at the Mass Spectrometry Laboratory of the Université de Liège, Liège (Belgium) on October 2020 (M34). SC7 has been postponed to M43 (July 2021) due to COVID19 pandemic restrictions.