



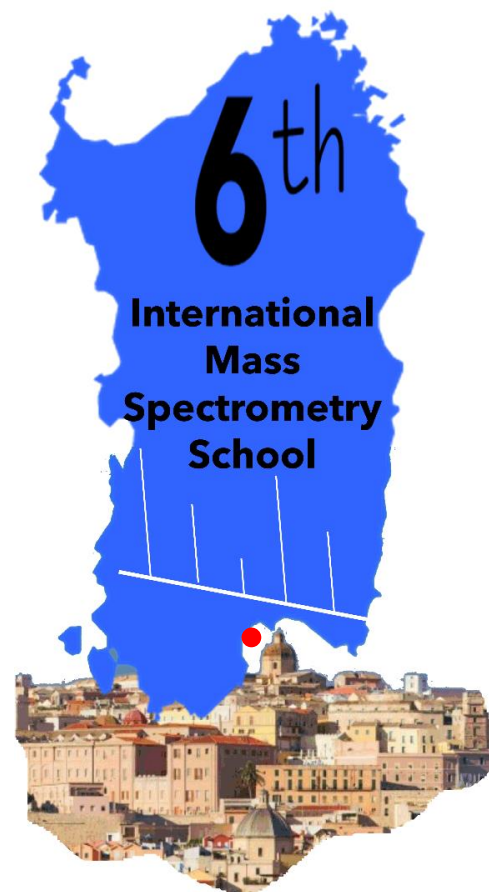
# 6<sup>th</sup> International Mass Spectrometry School

**Fundamentals, advances, instrumentation, and applications**



**Cagliari, Sardinia (Italy)**

**September 17-22, 2023**



<https://www.spettrometriadimassa.it/imss2023>

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## WELCOME FROM THE CHAIR AND THE SCIENTIFIC AND ORGANIZING COMMITTEES OF THE 6<sup>th</sup> IMSS

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On behalf of the Division of Mass Spectrometry (DSM) of the Italian Chemical Society, we would like to welcome you to the 6<sup>th</sup> International Mass Spectrometry School (IMSS) 2023 in Cagliari, Sardinia, Italy.

The International Mass Spectrometry Foundation started this educational activity, aimed to enforce, promote and diffuse the culture of mass spectrometry, in 2013 with the first edition of this school held in Siena (Italy).

After ten years, moving in Europe and out of Europe (Siena, Natal (Brazil), Dubrovnik (Croatia), Sitges (Spain) and Belfast (Ireland)) the school comes back to Italy in the town of Cagliari, in the magnificent island of Sardinia to celebrate its 10<sup>th</sup> anniversary. Many students attended the various editions of IMSS and each completely fulfilled its aims: give a good education, establish and favorite students-tutors and students-students interactions, high level tutors, informal and friendly atmosphere, great social events.

We think that also IMSS 2023 will be a useful occasion to enjoy science, learn or refresh principles and main applications of mass spectrometry with a look at the future, networking among participants and with tutors, enjoy ideas, suggestions by students, taste delicious food, experience the real local life.... in Cagliari, a very nice and lovely town in South Sardinia!

The city has a heritage of great importance, it's a green, small, clean and safe city with a Mediterranean climate. The international airport, very close to downtown, connects Cagliari to many towns in Europe.

We do wish IMSS 2023 will be an important experience for young scientists, not only from a scientific and cultural standpoint, but also for relationships, networking, talks, social events... in the special atmosphere of Cagliari and Sardinia.

With the support of everybody, we do hope that IMSS 2023 will be a successful, amazing and unforgettable school!!



Gianluca Giorgi (IMSS 2023 chair) and  
the IMSS 2023 scientific and organizing committees

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## WELCOME FROM THE IMSF PRESIDENT

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*It gives me great pleasure to invite you to join us at the 6th International Mass Spectrometry Foundation School in Cagliari, Sardinia for the 17-22 September 2023. Returning to Italy for the 10th anniversary of this flagship activity is particularly poignant.*

*Once again we are promised an exciting programme of lectures and workshops covering fundamentals and problem solving together with critically important networking opportunities for all delegates students and tutors alike.*



*John Langley (IMSF President)*

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## INTERNATIONAL MASS SPECTROMETRY SCHOOLS

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1 <sup>st</sup> IMSS – Siena, Italy	2013
2 <sup>nd</sup> IMSS – Natal, Brazil	2015
3 <sup>rd</sup> IMSS – Dubrovnik, Croatia	2017
4 <sup>th</sup> IMSS – Sitges, Spain	2019
5 <sup>th</sup> IMSS – Belfast, Ireland	2022

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## IMSF EXECUTIVE COMMITTEE, IMSF NATIONAL AFFILIATES

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### International Mass Spectrometry Foundation (IMSF)

#### Executive Committee

✓ John Langley	President	UK
✓ Ron Heeren	Vice President	Netherlands
✓ Maarten Altelaar	Treasurer	Netherlands
✓ Stephen Blanksby	Secretary	Australia
✓ Michael Sharon	Educational Officer	Israel
✓ Julia Chamot-Rooke	Region A Representative (Europe/Africa)	France
✓ Myeong Hee Moon	Region B Representative (Asia/Oceania)	Korea
✓ Scott A. McLuckey	Region C Representative (North America)	USA
✓ Rosa Erra-Balsells	Region D Representative (Central and South America)	Argentina

#### National Affiliates

- |                                       |   |
|---------------------------------------|---|
| ✓ Argentina – Rosa Erra Balsells      | ✓ Korea – Byungjoo Kim                  |
| ✓ Australia/New Zealand – Tara Pukala | ✓ Malaysia - Low Teck Yew               |
| ✓ Austria – Günter Allmaier           | ✓ Netherlands – Anouk Rijs              |
| ✓ Belgium – Jeff Rozenski             | ✓ Norway – Leon Reubsæet                |
| ✓ Brazil – Marcos Eberlin             | ✓ Peoples Rep. of China – Yuanjiang Pan |
| ✓ Canada – Derek Wilson               | ✓ Poland – Katarzyna Pawlak             |
| ✓ Czech Republic – Jan Preisler       | ✓ Portugal – Maria Helena Florencio     |
| ✓ Denmark – Steen Pontoppidan         | ✓ Romania – Zaharie Moldovan            |
| ✓ Finland – Olli Laine                | ✓ Russia – Albert Lebedev               |
| ✓ France – Isabelle Fournier          | ✓ Singapore – Lin Qingsong              |

- ✓ Germany – Thorsten Benter
- ✓ Greece – Despina Tsipi
- ✓ Hong Kong – Andy Siu
- ✓ Hungary – Karoly Vekey
- ✓ India – Rajesh Kumar Vasta
- ✓ Ireland – Mike Kinsella
- ✓ Israel – Yariv Brotman
- ✓ Italy – Fulvio Magni
- ✓ Japan – Michisato Toyoda
- ✓ Slovenia – Helena Prosen
- ✓ South Africa – Egmont Rohwer
- ✓ Spain – Estaban Abad
- ✓ Sweden – Jonas Bergquist
- ✓ Switzerland – Bertran Rubi
- ✓ Taiwan – Yi-Sheng Wang
- ✓ United Kingdom – Jackie Mosely
- ✓ United States of America – Julia Laskin
- ✓ Ukraine – Marina Kosevich

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*6<sup>th</sup> IMSS SCIENTIFIC COMMITTEE*

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**Gianluca Giorgi**  
Univ. of Siena



**Cecilia Bergamini**  
ARPAE, Bologna



**Giuliana Bianco**  
Univ. of Basilicata



**Donatella Caruso**  
Univ. of Milano



**Riccardo Flamini**  
CREA-VE, Conegliano



**Roberta Galarini**  
IZSUM, Perugia



**Fulvio Magni**  
Univ. of Milano Bicocca



**Luciano Navarini**  
Illycaffè, Trieste

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## 6<sup>th</sup> IMSS ORGANIZING COMMITTEE

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Michela Begala  
Univ. of Cagliari



Pierluigi Caboni  
Univ. of Cagliari



Luigi Atzori  
Univ. of Cagliari



Tiziana Cabras  
Univ. of Cagliari



Giorgia Sarais  
Univ. of Cagliari



Pietro Urgeghe  
Univ. of Sassari



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*6<sup>th</sup> IMSS TUTORS*

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Carlos Afonso	Université de Rouen	France
Coral Barbas Arribas	Universidad San Pablo	Spain
Giuliana Bianco	Univ. of Basilicata	Italy
Pierluigi Caboni	University of Cagliari	Italy
Diego Cobice	Ulster University	Ireland
Chiara Cordero	Univ. of Torino	Italy
Valérie Gabelica	Université de Bordeaux	France
Pascal Gerboux	University of Mons	Belgium
Gianluca Giorgi	University of Siena	Italy
Ron M. A. Heeren	Maastricht University	The Netherlands
Giancarlo la Marca	University of Florence	Italy
John Langley	University of Southampton	UK
Martina Marchetti-Deschmann	Technischen Universität Wien	Austria
Nico Mitro	University of Milano	Italy
Giuseppe Paglia	University of Milano Bicocca	Italy
Michele Suman	Barilla, Parma	Italy
Vicki Wysocki	Ohio State University	USA

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6<sup>th</sup> IMSS PATRONAGES

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*Università di Cagliari*

## GENERAL INFORMATION

The IMSS2023 is held in Cagliari, the most important city of Sardinia located in its Southern part.

The city has a soul consisting of a millenary history, culture, nature, beach tourism, charmed by the views of Castello, the ramparts and the Roman remains, the Sardinian sea, as well as by the dynamism of a surprisingly lively city.

### School venue

The IMSS2023 venue is the

#### **Hotel Regina Margherita \*\*\*\***

viale Regina Margherita 44, Cagliari



### Get to CAGLIARI

#### By plane

Cagliari has an international airport with connections with most of European cities.



<http://www.sogaer.it/en>

Downtown can be reached by train in 10 mins.

### By ships

The port in Cagliari has boat lines connecting some towns in Italy.



### **VISIT SARDINIA**

Discover Sardinia, its landscapes, amazing beaches, delicious food & wines

<https://www.sardegnaturismo.it/en>

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## 6<sup>th</sup> IMSS PROGRAM

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<b>Sunday, September 17</b>
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17:30	Registration	
18:30	Opening session	
18:45	Mass spectrometry. Where is it from? Where it is and where is it going?	J. Langley
20:00	End of session	
20:30	Welcome cocktail	

<b>Monday, September 18</b>
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### *Ionization techniques: volatile molecules*

8:30	Mass spectrometry: an introduction	J. Langley
9:30	Coffee break & poster session	
10:15	Ionization of volatile molecules: electron ionization (EI), chemical ionization (CI). Fragmentation processes, energetics	G. Giorgi
12:00	Study of complex mixtures of volatile molecules: GC, fast GC, GC×GC	C. Cordero
13:15	Lunch	

### *Ionization techniques: polar molecules*

14:30	Soft ionization techniques: ESI, DESI, APCI. Ambient mass spectrometry. Mechanisms of ion production	C. Afonso
16:30	Study of complex mixtures of polar molecules: HPLC, UHPLC, LC x LC	J. Langley
18:00	End of session	
18:00	<i>Urban trekking</i> in Cagliari: discover the beautiful and sneaking corners of the town ..... Guided tour	

**Tuesday, September 19*****MALDI. Analyzers (I)***

8:30	Matrix-assisted laser desorption ionization, MALDI-2. Mechanisms of ion production	R. Heeren
9:30	Analyzers (I). Ion separation in space: beam instruments: sectors, quadrupole, time-of-flight	M. Marchetti-Deschmann
10:30	Coffee break	

***Analyzers (II). High resolution, accurate mass measurements***

11:00	Analyzers (II). Ion separation in time: ion traps, FT-ICR, Orbitrap	C. Afonso
12:00	High resolution mass spectrometry, accurate mass measurements. Examples and applications	G. Bianco
13:00	Lunch	

***Tandem mass spectrometry***

14:30	Tandem mass spectrometry (MS/MS) and MS <sup>n</sup> (I): instrumentation and methodologies	P. Gerbaux
16:30	Coffee break & poster session	
17:15	Tandem mass spectrometry (MS/MS) and MS <sup>n</sup> (II): ECD, ETD, SID, IRMPD	
18:30	End of session	

**Wednesday, September 20***Fragmentation/decomposition reactions. Artificial intelligence in MS. Proteomics*

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8:30	Examples and exercises of fragmentation/decomposition reactions	D. Cobice
10:00	Coffee break	
10:30	Artificial intelligence in MS	C. Cordero
11:45	Bottom-up, top-down, and complex-down proteomics	V. Wysocki
13:00	Lunch	
14:15	All to the beach!! Travel by bus Enjoy the magnificence of sand and sea of the Sardinia beaches	
20:30	Social dinner	
23:30	Go back to Cagliari	

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<b>Thursday, September 21</b>
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***MS Imaging, ion mobility***

8:30	Imaging mass spectrometry	R. Heeren
9:45	Ion mobility	V. Gabelica
11:00	Coffee break	

***Do it by yourself !***

11:30	Exercises on MS, HRMS and MS/MS interpretation, mechanisms, .....	D. Cobice, P. Gerbaux
	<b>Award for the best MS solver!</b>	
13:00	Lunch	

***Short orals. MS in metabolomics & in lipidomics***

14:30	Short orals by students (10 mins each)	
	<b>Award for the best short oral!</b>	
16:00	MS in metabolomics	C. Barbas Arribas
17:30	Coffee break	
18:00	MS in lipidomics	P. Caboni
19:30	End of session	

<b>Friday, September 22</b>
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***Quantitation; biomedical applications; data analysis; MS in food***

8:30	Quantitation by MS and MSn	N. Mitro
9:30	Biomedical applications of MS: newborn screening	G. la Marca
10:30	Data analysis	G. Paglia
11:30	Coffee break	
12:00	Food authentication and traceability	M. Suman
13:00	Arrivederci!	



