

## FINAL ANNOUNCEMENT

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European Microbeam Analysis Society

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### EMAS 2013

13th  
EUROPEAN WORKSHOP

on

## MODERN DEVELOPMENTS AND APPLICATIONS IN MICROBEAM ANALYSIS

12 to 16 May 2013

at the

Centro de Congressos do Alfândega  
Porto, Portugal

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Organised in collaboration with:

LNEG - Laboratório Nacional de Energia e Geologia  
SPMICROS - Sociedade Portuguesa de Microscopia

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## **Scope of the workshop series**

The primary aim of this series of Workshops is to assess the state-of-the-art and reliability of microbeam analysis techniques.

The Workshops are organised in such a way as to maximise transfer of knowledge among the participants and to provide a comprehensive exhibition of the latest analytical equipment. The programme allows for adequate time and opportunities for participants to visit the technical exhibitions and interact with the manufacturers.

Previous Workshops in this series were held in Antwerp (1989), Dubrovnik (1991), Rimini (1993), St. Malo (1995), Torquay (1997), Konstanz (1999), Tampere (2001), Chiclana de la Frontera (2003), Florence (2005), Antwerp (2007), Gdansk (2009), and Angers (2011). They mainly dealt with electron (EPMA, TEM, SEM, Auger, EELS), ion (SIMS, FIB), and nuclear (RBS, NRA) microbeam methods.

The main topics of the **Thirteenth Workshop** (EMAS 2013) are: pushing the limits of EPMA, microanalysis in the SEM, new techniques, developments and concepts, applications of microbeam analysis. Time will also be devoted to problem orientated applications in material science, geological science, environmental studies, astrophysics, microelectronics, forensics, cultural heritage and archaeology, nanomaterials, surfaces and interfaces, catalysts, sensors, ...

## **Round-table discussions**

Our *round-table* discussions are panel discussions taking place at the end of each scientific session on a main topic. They are moderated by a leading expert, assisted by the invited speakers of the corresponding session.

The idea is to stimulate the exchange of information and experience among the participants on a number of important problems in microbeam techniques. Such activities need careful preparation, both with regard to structure and subjects. Therefore, we would kindly request you to complete the discussion questionnaire on the reverse side of the registration form. If you have specific questions, these can also be mentioned in 'Other suggestions' on the questionnaire.

Brief presentations or contributions to the round-table discussions are encouraged (please contact the round-table chairperson at the beginning of the Workshop).

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## **Posters**

Poster contributions are welcome on subjects within the scope of the workshop (see Scope). The abstracts will be refereed by the International Scientific Committee and will be published, together with the text of the invited lectures, in the *Book of Tutorials and Abstracts* of the Workshop.

**There will be three Oral Poster Sessions in which selected authors will be given 5 minutes to present the highlights of their poster using two or three powerpoint slides. Those authors selected will be notified some weeks prior to the workshop.**

Authors have the opportunity to discuss their posters during the three poster sessions. Posters will be on display during the whole Workshop. Size of the display area: 1.15 m high by 0.85 m wide.

The best poster contributions will receive an EMAS Award, with as a first prize an invitation from AMAS - Australian Microbeam Analysis Society to present his/her work at a microbeam event in Australia (the Award will include a free conference registration and financial support from AMAS and EMAS for travel and living expenses), and second and third prizes of € 150.

## **Young scientists' session**

One session is dedicated to giving young scientists (post-graduates and scientists under 30) the opportunity to present their work in a talk lasting 15 minutes including time for discussion. There will be six such presentations selected from the submitted abstracts. Those contributions selected by the International Scientific Committee will receive an EMAS Award of € 100.

The best contribution and presentation will receive an invitation from the Microanalysis Society of America to present his/her work at the Microscopy and Microanalysis 2014 Meeting to be held in Hartford, Connecticut (the Award will include a free conference registration and financial support from MAS and EMAS for travel and living expenses).

Young scientists wishing to be considered for this session should submit a written application together with their abstract, and should be member of EMAS. Recipients of an EMAS bursary are also eligible to apply.

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## **Abstracts**

Abstracts of poster contributions to be presented during the workshop should be sent on one A4 page. The authors should submit a camera-ready copy according to the following guidelines:

THE TITLE SHOULD BE TYPED IN CAPITALS, starting at the beginning of the line.

B. Epma, F. Rozet and Q.X. Ray

University of Monte Carlo, Centre for Quantitative X-ray Microanalysis  
Monte Carlo, Monaco.

Page size: A4 (21 x 29.7 cm)

Margins: 3.0 cm all-round

Text: single line spacing, 12-pt. Times Roman typeface

Wordprocessor format: Word or WordPerfect, or Rich Text Format (RTF)

The electronic version of the abstract, together with a PDF-copy, to be sent as e-mail attachments to the Workshop Secretariat, must reach it before **15 November 2012**. Authors will be notified of the acceptance of their poster by **15 January 2013**.

A passport-style photograph of the presenting author should be included with the electronic version of the abstract (in JPEG- or TIFF-format). This will be reproduced in the *Book of Tutorials and Abstracts* to assist other participants in contacting the author during the Workshop.

## **Publication**

Authors of accepted contributions are invited to submit a manuscript for publication in a volume of the IOP – Institute of Physics Conference Series – Materials Science and Engineering, appearing some months after the Workshop. All submitted papers will be peer-reviewed. Owing to limitations imposed by the publisher, the editors will apply a stringent selection procedure based on quality, diversity, and adherence to the manuscript preparation rules. Manuscripts will have to be submitted in the format outlined by the publisher to the EMAS Secretariat.

# EMAS bursaries

A number of EMAS grants are available to (student) **members** of the Society. They include a free “student” registration and free accommodation package for the duration of the Workshop (in a shared twin room) in a hotel assigned by the Workshop. The conditions for the award of an EMAS bursary are as follows:

- the applicant must submit an abstract for a poster contribution;
  - the applicant must be a young scientist (under 30) and a member of EMAS;
  - a letter from the applicant's supervisor supporting the application must accompany the abstract.

A number of EMAS grants are available to **technician members** of the Society. They include a free "student" registration and free accommodation package for the duration of the Workshop (in a shared twin room) in a hotel assigned by the Workshop. The conditions for the award of an EMAS bursary are as follows:

- the applicant must submit an abstract for a poster contribution;
  - the applicant must be a member of EMAS;
  - a letter from the applicant's supervisor supporting the application must accompany the abstract.

The quality and relevance of the work presented in the abstract are the main criteria on which successful applications will be judged. In principle the allocation of 2 EMAS Grants per person is the norm; a 3rd grant could in exceptional cases be awarded.

# Exhibition

Ample space, immediately adjacent to the lecture and poster areas, will be available for the exhibition of instruments, equipment, leaflets and books. Interested companies are invited to contact the Workshop Secretariat.

## Key dates

## **Short course: Introduction to EPMA (Sunday May 12, 2012)**

*Stuart Kearns (University of Bristol, GB), Mike Matthews (AWE Plc., Reading, GB), and Fernanda Guimarães (LNEG, Porto, Portugal).*

A one-day short course to introduce the physical and practical methods of EPMA. The course is delivered as a series of on-instrument demonstrations and short lectures. The course is aimed at students and researchers with either no or limited experience of EPMA although some familiarity with basic SEM techniques would be beneficial.

The course will cover:

- Overview of WDS EPMA; Electron beam–solid interaction; Monte Carlo modelling; Characteristics of X-ray detectors in the EPMA (EDS, WDS); Analysis of trace elements; Light element analysis.
- Practical demonstrations on a Jeol 8500F EPMA through a series of case studies will introduce students to instrument set-up and spectrometer configuration, qualitative ED/WD scans. Overlap corrections on WDS, primary standard calibration, WD X-ray mapping, and quantitative analysis set-up and automation.

For a more detailed course description, see: [www.emas-web.net](http://www.emas-web.net).

Strictly limited to 20 participants; a minimum attendance of 10 participants is required. The course is only open to workshop participants.

Cost is € 100 for EMAS/SPMICROS members and € 200 for non members, covering course material, lunch, refreshment breaks, and coach transfer to/from LNEG and the workshop venue - Centro de Congressos do Alfândega, Porto.

## **Workshop language**

The official language of the Workshop will be English.



## PROGRAMME

### Sunday 12 May 2013

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|---------------|--|
| 09.00 - 18.00 | Short course: <b>Introduction to EPMA</b> .<br>Departure from and return to the workshop venue.                |
| 16.30 - 19.00 | Registration   |
| 19.00 - 21.00 | Informal buffet reception hosted by the International Scientific Committee and the Local Organising Committee. |
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## PROGRAMME

### Monday 13 May 2013

09.00	Welcome and opening address Michael B. MATTHEWS (President of EMAS) Fernanda GUIMARÃES (EMAS 2013 Workshop chairperson)
09.15	<b>Improving analytical spatial resolution with the field emission electron microprobe.</b> Silvia RICHTER (R.W.T.H. Aachen, Gemeinschaftslabor für Elektronenmikroskopie (GfE), Aachen, Germany)
10.00	<b>Characterisation of sub-micrometre features with the FE-EPMA.</b> Peter MCSWIGGEN (McSwiggen & Associates, St. Anthony, MN, U.S.A.)
10.45	Coffee break / Exhibition visit
11.15	Presentation by the MAS-USA President: <b>Physicochemical characterisation of cerium particles generated by combustion of Ce-doped diesel fuel.</b> Kristin L. BUNKER (RJ Lee Group, Inc., Monroe, PA, U.S.A.)
11.45	Presentation by the Australian AMAS President: <b>Quantitative X-ray mapping, scatter diagrams and the generation of correction maps to obtain more information about your material.</b> Richard WÜHRER (University of Western Sydney, Advanced Materials Characterisation Facility, Penrith, NSW, Australia)
12.15	Lunch break / Exhibition visit
14.00	<b>Presentation of new equipment and software by the exhibiting companies.</b> chairpersons: Jaroslav KLIMA (Tescan, a.s., Brno, Czech Republic) Xavier LLOVET (University of Barcelona, Centres Científics i Tecnològics (CCiT), Barcelona, Spain)
16.00	Coffee break / Exhibition visit
16.30	<b>The importance of secondary fluorescence in EPMA.</b> Jon WADE (University of Oxford, Department of Earth Sciences, Oxford, Great Britain)
17.15	<b>Can SDD outperform WDS?</b> Nicholas W.M. RITCHIE (National Institute of Standards and Technology, Surface and Microanalysis Science Division, Gaithersburg, MA, U.S.A.)
18.00	Round-table discussion: * <b>Electron probe microanalysis.</b> chairpersons: Fernanda GUIMARÃES (Laboratório Nacional de Energia e Geologia, I.P., Laboratório Ciência e Tecnologia Mineral, San Mamede de Infesta, Portugal) Michael B. MATTHEWS (AWE Plc., Reading, Great Britain)

## PROGRAMME

**Tuesday 14 May 2013**

09.00	<b>Oral presentations of the contributed posters: I.</b> chairperson: Stuart L. KEARNS (University of Bristol, School of Earth Sciences, Bristol, Great Britain)
09.45	Poster session I / Coffee break
10.30	<b>Young scientists' session.</b> chairperson: Fernanda GUIMARÃES (Laboratório Nacional de Energia e Geologia, I.P., Laboratório Ciência e Tecnologia Mineral, San Mamede de Infesta, Portugal)
12.00	Presentation by Australian AMAS Student Award Winner: <b>Cathodoluminescence irradiation kinetics of InGaN/GaN multi quantum wells.</b> Mark N. LOCKREY (Sydney University of Technology, School of Physics and Advanced Materials, Broadway, New South Wales, Australia)
12.15	Lunch break / Exhibition visit
14.00	<b>High speed, high resolution X-ray imaging and spectroscopy.</b> Lothar STRÜDER (Max-Planck Institut für extraterrestrische Physik, Halbleiterlabor, Munich, Germany)
14.45	<b>Microcalorimeter detector developments and practical application results.</b> Robin CANTOR (Star Cryoelectronics, Santa Fe, NM, U.S.A.)
15.30	Coffee break / Exhibition visit
16.00	<b>The He-ion microscope: principles and applications.</b> Raoul VAN GASTEL (University of Twente, MESA+ Institute for Nanotechnology, Physics of Interfaces and Nanomaterials (PIN), Enschede, The Netherlands)
16.45	<b>Scanning probe - atomic force microscopy: new developments and applications.</b> Giovanni VALDRÈ (Università di Bologna, Dipartimento di Scienze Biologiche, Geologiche e Ambientali, Bologna, Italy)
17.30	Round-table discussion: * <b>Future technologies.</b> chairpersons: Hans DIJKSTRA (ThermoFisher Scientific BV, Breda, The Netherlands) Carlos P. MOREIRA DE SÁ (Universidade do Porto, CEMUP - Centro de Materiais, Porto, Portugal)

## PROGRAMME

**Wednesday 15 May 2013**

09.00	<b>Oral presentations of the contributed posters: II.</b> chairperson: Enrico LANGER (Technical University of Dresden, Institut für Festkörperphysik, Dresden, Germany)
09.45	Poster session II / Coffee break
10.30	<b>Current state of the art of electron backscattered diffraction (EBSD).</b> Ken MINGARD (National Physical Laboratory, Division of Engineering and Process Control, Teddington, Great Britain)
11.15	<b>A review of advances and challenges in EBSD strain mapping.</b> Angus J. WILKINSON (University of Oxford, Department of Materials, Oxford, Great Britain)
12.00	Round-table discussion: * <b>Electron backscattered diffraction (EBSD).</b> chairperson: François BRISSET (Université Paris-Sud, Institut de Chimie Moléculaire et des Matériaux d'Orsay, Orsay, France)
12.30	Lunch break / Exhibition visit
14.00	EMAS Annual General Meeting
14.45	<b>Evaluation of quantitative procedures for X-ray microanalysis of environmental particles.</b> Karine DEBOUDT (Université du Littoral Côte d'Opale, LPCA - Lab. Physico-chimie de l'Atmosphère, Dunkerque, France)
15.30	Coffee break / Exhibition visit
16.00	<b>Microanalysis of cosmic dust.</b> Edward P. VICENZI (Smithsonian Institution, Museum Conservation Institute, Suitland, MA, U.S.A.)
16.45	Round-table discussion: * <b>Particle analysis.</b> chairperson: Romano RINALDI (Università di Perugia, Dipartimento Scienze della Terra, Perugia, Italy)
19.00	Coach transfer from workshop venue to Vila Nova de Gaia, for a visit of and workshop dinner at the Taylor's Port Cellars.

## PROGRAMME

### Thursday 16 May 2013

09.00	<b>Oral presentations of the contributed posters: III.</b> chairperson: Maria Teresa F. VIEIRA (Universidade de Coimbra - Polo II, Fac. Ciências e Tecnologia, Depto. Engenharia Mecânica, Coimbra, Portugal)
09.45	Poster session III / Coffee break
10.30	<b>Understanding the structure of nano-catalysts with HR(S)TEM.</b> Leonard D. FRANCIS (INL - International Iberian Nanotechnology Laboratory, Nanomachines & Nanomanipulation, Braga, Portugal)
11.15	<b>Nano-scale characterisation of semiconductors by cathodoluminescence.</b> Klaus THONKE (Universität Ulm, Institute for Quantum Matter, Gruppe Halbleiterphysik, Ulm, Germany)
12.00	Lunch break / Exhibition visit
13.30	<b>Importance of advanced characterisation techniques in the synthesis of novel nano materials.</b> Vasco TEIXEIRA (Universidade do Minho, Department of Physics, GRF Functional Coatings Group, Guimarães, Portugal)
14.15	<b>Diffusion chronometry – nano-scale analysis of volcanic crystals.</b> Kate SAUNDERS (University of Edinburgh, School of Geosciences, Edinburgh, Great Britain)
15.00	Round-table discussion: * <b>Applications.</b> chairpersons: Miran Čeh (Jozef Stefan Institute, Department for Nanostructured Materials, Centre for Electron Microscopy, Ljubljana, Slovenia) Joaquim M. VIEIRA (Universidade de Aveiro, Departamento de Engenharia Cerâmica e do Vidro, Aveiro, Portugal)
16.00	EMAS awards presentation
16.15	Concluding remarks

## Social programme

All participants and accompanying persons are invited to the welcome buffet reception on Sunday evening. This informal get-together is hosted by the International Scientific Committee and the Local Organising Committee.

The workshop dinner, on Wednesday evening, will be held at the Taylor's Port Cellars in Vila Nova de Gaia, and will include a visit to their cellars. The cost is included in the registration fee but is extra for accompanying persons.

## Registration fees

Participants are requested to complete and return the enclosed registration form together with their payment, preferably before 15 March 2013 to qualify for reduced rates. The registration fee includes:

- the welcome buffet;
- all lunches and refreshment breaks;
- the workshop dinner;
- a copy of the Book of Tutorials and Abstracts containing the detailed programme, the text of the invited lectures, and the abstracts of the poster presentations;
- a hard copy of the Workshop Proceedings (except with student registration, or equivalent).

	early rate before March 15	late rate after March 15
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Workshop attendance:		
- Current EMAS / SPMICROS members	€ 450.00	€ 550.00
- Registration + 2-year EMAS membership	€ 520.00	€ 620.00
- Non-member registration only	€ 600.00	€ 700.00
- Student / EMAS member in retirement (without proceedings volume)		€ 225.00
Workshop dinner:		
for exhibitors, accompanying persons		€ 50.00
Proceedings volume (hard copy):		
for students, exhibitors, accompanying persons		€ 40.00
Short course - Introduction to EPMA:		
- Current EMAS / SPMICROS members		€ 100.00
- Non-member registration		€ 200.00

## **Payment**

Payment of the registration fee, without charges to the beneficiary, should be made to the European Microbeam Analysis Society. Payment can be made by:

- a) bank transfer to EMAS 2013 IBAN account no. BE72 9530 3981 3516, BIC/Swift code: CTBKBEBX, at the Citibank (Statielei 95, BE-2640 Mortsel, Belgium);
- b) a bank cheque in Euro, drawn on a Belgian bank, to the order of EMAS 2013 (attn. Luc Van't dack) and mailed to the Workshop Secretariat;
- c) credit cards: Visa, Mastercard, American Express (please complete and sign the relevant part on the registration form).

## **Cancellation**

Refund of the registration fee (less € 50 administrative costs) will only be granted if notification of cancellation has reached the Workshop Secretariat before 15 April 2013. After this date, no refund will be made. Refunds will be processed after the Workshop.

## **Accommodation**

Porto has a wide range of mostly smaller hotels in the city centre, within walking distance (up to 25 min) of the workshop venue. Some of them are listed below; quoted rates are per room and per night (incl. breakfast and taxes). The high season in Porto starts in May and therefore it is advisable to book your hotel as soon as possible to benefit from these rates.

	<b>single</b>	<b>double or twin</b>
Eurostars das Artes (4*)	€ 74.00	€ 88.00
Porto Trindade Hotel (4*)	€ 64.00	€ 70.00
Grande Hotel do Porto (3*)	€ 76.00	€ 83.00
Quality Inn Praça da Batalha (3*)	€ 62.00	€ 69.00 or € 82.00
Grande Hotel de Paris (2*)	€ 62.00	€ 68.00
B&B Hotel Porto Centro (2*)	€ 52.95	€ 58.90

To obtain the formal details and further information about these hotels please contact: [sgoncalve.bomsucesso@abreu.pt](mailto:sgoncalve.bomsucesso@abreu.pt).

There are also quite a number of guesthouses and hostels. Participants are free to make their own accommodation arrangements. Useful information can be found at: [www.portoturismo.pt/Visitar/Paginas/Descobrir/ListaVisit.aspx?AreaType=4&Area=14](http://www.portoturismo.pt/Visitar/Paginas/Descobrir/ListaVisit.aspx?AreaType=4&Area=14).

## Venue

Centro de Congressos do Alfândega ([www.amtc.pt](http://www.amtc.pt))  
Rua Nova da Alfândega Edifício da Alfândega  
PT-4050-430 Porto, Portugal

The Alfândega conference venue, one of the largest in Portugal, is a former customs building, designed by the French architect Jean Colson, dating from 19th century. The building was tastefully restored in 1993 by architect Souto Moura, the same architect who was awarded the 2011 Pritzker Prize. It is singular in style with an unforgettable riverside location in the heart of Porto's historic centre.

The old city of Porto, located on the northern bank of the Douro River, is a UNESCO World Heritage Site since 1996. The origins of the city start with *Cale*, a pre-roman settlement and Bronze Age trading post, that was latter occupied by Romans and became the strategic outpost of *Portus of Cale*. This Latin name is referred as the origin of the name Portugal. *Portucale* evolved into *Portugale* during the 7th and 8th centuries, and by the 9th century, that term was used extensively to refer to the region between the rivers Douro and Minho, the Minho flowing along what would become the northern border between Portugal and Spain.

The city was largely abandoned during the Arab invasions of the 8th century but was reconstituted by Christians in 868. The city again became a key point of commerce, known for shipbuilding. By the time of Portugal's imperial expansion in the 15th century, Porto had the most important shipyard in the country.

One of Portugal's most internationally famous products, port wine, is named after the city because it is stored and shipped from the area. The trade in *Vinho do Porto* (port wine) began in the 17th century and was a driving force of the boost in the economy of the city. Port wine is produced and processed at the vineyards of Douro valley, classified by UNESCO in 2001, [World Heritage Port Wine Region](#).

## The weather in Porto in May

Porto has a maritime climate. Average high temperature in May is around 20 °C. It can rain but it can also be quite warm.

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## **How to get to the Workshop venue**

The Alfândega conference venue is situated on the riverfront in the historical centre of Porto. The nearest train and metro station is São Bento.

- a) By air: The Francisco Sá Carneiro airport is located 11 km north of the city. Several regular and low-cost companies fly to Porto. The airport is connected to the city centre by metro line E (violet), taking approx. 40 min.
- b) By train: From Lisbon, take the train (Alfa Pendular or Intercidades) at the Gare do Oriente or Santa Apolónia train stations in the direction of Porto Campanhã train station. At the Campanhã station take an urban train heading to the São Bento train station in the city centre. Note that no extra train ticket is necessary to reach São Bento. Metro, taxi or bus is also available at the Campanhã train station.
- c) By car: Porto is linked by highways to Spain. Highways require a toll. From Lisbon you should take the A1 highway to Porto. Complimentary parking, next to the conference centre, is offered to the participants of the Workshop

Porto has a metro system, running from 6 a.m. until 1 a.m. One must use the "*andante*", a blue rechargeable card that costs € 0.50. The same cards can also be used on the city bus lines (STCP) and other lines like the downtown trams and the scenic cable car (Funicular dos Guindais). Complete information, including timetables and a map of the metro system, can be found at: [www.metroporto.pt/en/](http://www.metroporto.pt/en/).

## **Personal data**

Personal information supplied to EMAS will be held on computer and may be used only for purposes connected with the activities of the European Microbeam Analysis Society.

## **Insurance**

The organisers cannot be held responsible for any personal accident or damage to the property of the participants.

## **International Scientific Committee**

François Brisset	<i>France</i>
Miran Čeh	<i>Slovenia</i>
Hans Dijkstra	<i>The Netherlands</i>
Fernanda Guimarães (chairperson)	<i>Portugal</i>
Stuart L. Kearns	<i>Great Britain</i>
János Lábár	<i>Hungary</i>
Enrico Langer	<i>Germany</i>
Xavier Llovet	<i>Spain</i>
Michael B. Matthews	<i>Great Britain</i>
Carlos P. Moreira de Sá	<i>Portugal</i>
Silvia Richter	<i>Germany</i>
Romano Rinaldi	<i>Italy</i>
Joaquim M. Vieira	<i>Portugal</i>
Maria Teresa F. Vieira	<i>Portugal</i>
Clive T. Walker	<i>Germany</i>

## **Local Organising Committee**

Fernanda Guimarães (chairperson)  
Jorge A. Ferreira  
Xavier Llovet  
Luc Van't dack

## **Workshop Secretariat**

EMAS Secretariat  
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Updated information on the workshop can be found at the EMAS 2013 website: [www.emas-web.net](http://www.emas-web.net).