



UNIVERSITY
OF TRENTO - Italy
Department of Physics



SOCIETÀ ITALIANA LUCE DI SINCROTRONE
ITALIAN SYNCHROTRON RADIATION SOCIETY

XXIII SILS MEETING

8 – 10 July 2015

Abstract book

University of Trento
Department of Humanities - Auditorium
via Tommaso Gar 14, Trento (Italy)

Chairpersons

Federico Boscherini, University of Bologna

Giulio Monaco, University of Trento

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Dear Colleagues,

we are very happy to welcome you to the 23rd annual conference of SILS – the Italian Synchrotron Radiation Society (www.synchrotron-radiation.it), hosted this year by the Physics Department of the University of Trento.

SILS is one of the oldest independent scientific societies in the field, the objective of which is to promote synchrotron radiation and free electron laser science in Italy within the European context. Synchrotron radiation studies have a strong tradition in Trento. Local physicists gave a strong contribution to the first use of synchrotron radiation in Frascati and subsequently to the Italian Collaborating Group beamline at ESRF. Presently many University groups are involved in various projects at ESRF, Elettra and are users of many Synchrotron Radiation and Free Electron Laser facilities worldwide.

The conference will highlight recent scientific results spanning from novel accelerator schemes for the production of electromagnetic radiation to structural biology. We are particularly happy that we have been able to attract participants from all over Europe. The conference is mostly organized in thematic sessions – the first time for a SILS conference; the excellent participation indicates that this is a good choice. Also very important will be the review of the status and perspectives of major facilities of interest for the Italian community and the annual meeting of SILS members.

The inaugural session will be the occasion for interesting lectures by the winners of two young scientist prizes: Alberto Mittone (ESRF) and Riccardo Pompili (INFN Frascati).

We would like to thank the members of the local organizing committee, the session chairpersons and the members of the SILS executive committee, all of whom gave an invaluable contribution to the event. In particular, we would like to thank Lucia Dorna for her constant and professional support for the organization of the Meeting.

The conference chairmen

Federico Boscherini
*University of Bologna
and SILS President*

Giulio Monaco
University of Trento

Wednesday 8 July

12:00	Registration	
15:00	Opening ceremony	
15:15	<p>Roy Wogelius Williamson Research Centre for Molecular Environmental Science and Interdisciplinary Centre for Ancient Life, University of Manchester, U.K.</p> <p>Applications of synchrotron radiation to environmental geochemistry and palaeometallomics</p>	PL1
16:00	SILS MoliRom Prize	Alberto Mittone (ESRF – Grenoble, F)
16:30	SILS SPECS Prize	Riccardo Pompili (INFN-LNF Frascati)
17:00	Coffee break	
17:30	<p>Alfonso Franciosi ELETTRa, Trieste, Italy.</p> <p>Status and perspectives of Elettra and FERMI@Elettra</p>	FAC1
18:00	<p>Harald Reichert ESRF, Grenoble, France</p> <p>The Upgrade of the ESRF: Science with Synchrotron Radiation from a 6 GeV Source</p>	FAC2
18:30	<p>Massimo Altarelli XFEL, Hamburg, Germany</p> <p>The European X-ray Free-Electron Laser: an ultra-bright high repetition rate X-ray source</p>	FAC3
19:15	Welcome Party	

Thursday 9 July

9:00	Ralph Assmann Deutsches Elektronen Synchrotron – DESY, Hamburg, Germany Progress in user-friendly x-ray sources based on plasma accelerators	PL2
Technical Commercial 1: SPECS		
9:40	Mario Da Prada PRA.MA. Sondalo, Italy - SPECS Surface Nano Analysis GmbH, Berlin, Germany Recent applications and results in Near Ambient Pressure XPS – In-situ cell designs for liquid environments	CO1
Technical Commercial 1: PANALYTICAL		
9:55	Zhaohui Bao PANalytical B.V., Almelo, The Netherlands - PANalytical Research Centre, SINC, University of Sussex, Brighton , UK Towards High Quality PDF, SAXS, GISAXS Results and More on a Laboratory Multipurpose X-ray Diffractometer	CO2
10:10	Coffee break	

10:30	Open Session 1 (Auditorium)		
10:30	S. Di Mitri	Synchrotron Light Sources Driving a High Gain Free Electron Laser	OS1-1
10:50	F. Giorgianni	The SPARC_LAB THz source	OS1-2
11:10	L. Mino	Direct X-ray writing of Josephson junction devices on the Bi₂Sr₂CaCu₂O_{8+δ} superconducting oxide: a proof of concept for X-ray nanolithography	OS1-3
11:30	B. Gobaut	Magnetostrictive layer in Magnetic Tunnel Junction: In Operando synchrotron-based characterizations.	OS1-4

11:50	L. Massimi	A synchrotron-radiation based study of chemical reactions from adsorbed molecular precursors to formation of graphene nanoribbons	OS1-5
12:10	F. Iesari	Local ordering in liquid metals probed by x-ray absorption spectroscopy	OS1-6
12:30	G. Pintori	Microscopic dynamics in the glass former B2O3 measured by X-ray photon correlation	OS1-7
12:50	End OS 1		

10:30	MS4 Synergistic approaches to Protein Dynamics / Biomedical applications (Room 001) CP: M. Cammarata - A. Boffi		
10:30	J. Van Thor	Ultrafast Protein X-ray Crystallography	KN1
11:00	M. Fratini	Different complementary X-ray techniques coupled to new analytical tools, for studying Biomineralization.	MS4-1
11:20	M. Reconditi	Recently Upgraded ID02 Beamline At ESRF Opens New Perspectives For Multiscale (nm-μm) Studies On Striated Muscle	MS4-2
11:40	C. Gramaccioni	Combined use of X-ray Fluorescence Microscopy, Phase Contrast Imaging and Atomic Force Microscopy for high resolution quantitative Fe mapping in inflamed cells	MS4-3
12:00	M. Levantino	Ultrafast protein dynamics observed with time-resolved X-ray scattering and absorption	KN2
12:30	A. Pearson	A new data collection strategy for time-resolved experiments using the Hadamard transform	KN3
13:00	End MS 4		

13:00	Lunch Poster Session		
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15:00	Dean Cvetko Physics Department, Faculty of Mathematics and Physics, University of Ljubljana, Slovenia Charge transfer times at the organic-organic and organic-inorganic interfaces	PL3
15:40	Coffee break	

16:00	MS1 Advanced materials for energy harvesting and storage (Auditorium) CP: A. Goldoni - L. Pasquini		
16:00	T. R. Jensen	Hydrides and ion conductors investigated using in situ powder X-ray diffraction	KN1
16:30	L. Gigli	Molecular wires confined in zeolite L channels for an effective transport of electronic excitation energy: a synchrotron structural study	MS1-1
16:50	A. Di Cicco	SEI growth and depth profiling on advanced Li-ion electrodes by soft x-ray absorption spectroscopy	MS1-2
17:10	P. Dolcet	A combined spectroscopic and structural characterisation of crystalline nanostructured manganites prepared by a green and low temperature hydrothermal route	MS1-3
17:30	B. Bozzini	Electrodeposition and ageing under operating conditions of Co- and Mn-based/PPy nanocomposite oxygen-reduction electrocatalysts, studied in situ and quasi-in situ by soft X-ray absorption, fluorescence and photoelectron microspectroscopies	KN2
18:00	End MS 1		

16:00	MS3 In operando studies of catalytic systems (Room 001) CP: F. Giannici - D. Ferri		
16:00	A. Beale	Chemical imaging using X-ray diffraction computed tomography to tackle everyday problems in heterogeneous catalysis	KN1
16:30	E. Borfecchia	Reactive Pt-sites in functionalized UiO-67-Pt MOFs: the XAS view	MS3-1
16:50	A. Martorana	X-ray Absorption under Operating Conditions for Solid-Oxide Fuel Cells Electrocatalysts	MS3-2
17:10	P. Ghigna	Evidence of charge transfer cascade in α-Fe₂O₃/IrO₂ photoanodes by in-operando X-ray Absorption Spectroscopy	MS3-3
17:30	M. Nachtegaal	Transient x-ray absorption and emission spectroscopies to determine the structure of the true catalytic active site.	KN2
18:00	End MS 3		

18:10	SILS Assembly		
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19:15	Departure for Dinner		
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Friday 10 July

9:00	Alessia Cedola Institute of Nanotechnology-Laboratory of Soft and Living Matter-CNR c/o Physics Department at 'Sapienza' University, Rome, Italy X-ray Synchrotron Phase Contrast multiscale-Tomography in Tissue Engineering and Regenerative Medicine	PL4
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09:45	Open Session 2		(Auditorium)
9:45	M. Gambino	Electrode-Electrolyte Compatibility in Solid-Oxide Fuel Cells Probed with X-Ray Microspectroscopy	OS2-1
10:05	C. Lamberti	Cu-CHA deNOx catalyst investigated by XAS and XES under reaction conditions	OS2-2
10:25	End Open Session 2		

09:45	Open Session 3		(Room 001)
9:45	F. Brigidi	Modelling of Grazing Incidence X-ray Fluorescence (GIXRF) Analyses	OS3-1
10:05	G. Aquilanti	Melting of iron determined by X-ray absorption spectroscopy to 100 GPa	OS3-2
10:25	End Open Session 3		

10:25	Coffee break		
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10:45	MS2 Synchrotron Radiation for industry and environment (Auditorium) CP: L. Gigli - M. Leoni		
10:45	D. Meroni	Synchrotron radiation in environmental remediation: Shedding light on the structural and electronic properties of second generation photocatalysts	KN1
11:15	S. Pollastri	In situ μXANES, μXRD and XRF iron mapping study of the morphostructural and chemical changes of mineral fibres in contact with cell cultures	MS2-1
11:35	I. Carlomagno	Detailed characterization of structure and magnetism in Co thin films upon intercalation under graphene using synchrotron radiation techniques	MS2-2
11:55	F. Bardelli	A new model for the formation of asbestos bodies in human lungs derived from synchrotron radiation micro-probe techniques	MS2-3
12:15	W. Jark	The X-ray Fluorescence beamline at Elettra: new characterization opportunities for nano-structured materials	MS2-4
12:35	P. Mazzeo	Synchrotron XRPD analytical services for pharma and chemical industries: the right synergy for superior results	KN2
13:05	End MS 2		

10:45	MW Joint neutron and x-ray investigations of disordered matter (Room 001) CP: S. De Panfilis - D. Bowron		
10:45	A. Soper	The benefits of joint structure refinement of X-ray and neutron total scattering data	KN1
11:10	M. Dapiaggi	Disordered materials for industrial applications	KN2
11:35	S. Diaz Moreno	Study of ion hydration by neutron and x-ray methods	KN3
12:00	D. Keen	Structures of amorphous metal organic frameworks (MOFs)	KN4
12:25	B. Ruzicka	Combined X-ray and neutron techniques to investigate structure and dynamics of a colloidal system	KN5
12:50	L. Properzi	High-pressure study of chalcogenide glasses by X-ray absorption spectroscopy	MW-1
13:10	End MW		

13:15	Poster prize and Closing ceremony		
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List of Posters

Instrumentation		
T. Pincelli , V. N. Petrov, R. Ciprian, V. Lollobrigida, G. Brajnik, S. Carrato, A. Gubertini, R. Sergo, G. Cautero, G. Panaccione, G. Rossi	Spin polarization in the ultrafast regime: design and commissioning of a dedicated set-up	P1
Milen Gateshki, Zhaohui Bao , Fabio Masiello, Patricia Kidd	Performing GISAXS measurement on a Laboratory X-ray Diffractometer	P2
F. d'Acapito, A. Trapananti , A. Puri	Upgrade of the Italian CRG beamline at the ESRF: LISA-BM08	P3
Gian Luca Chiarello, Maarten Nachtegaal, Valentina Marchionni and Daide Ferri	A universal reactor cell for operando experiments?	P4

Chemistry - Catalysis		
Daide Ferri , Mark A. Newton and Marco Di Michiel	Dynamics of catalytic Pd nano-particles studied by time resolved high energy XRD	P5
Marchionni Valentina , Maarten Nachtegaal , Jakub Szlachetko, Anastasio Kamboli, Oliver Kröcher and Daide Ferri	Modulated excitation high-energy resolution off-resonant spectroscopy (HEROS) study of CO oxidation on Pt/Al ₂ O ₃	P6
Luca Braglia , Aram Bugaev, Kirill Lomachenko,, Mikhail Soldatov, Rene Kopelent, Carlo Lamberti, Alexander Soldatov, Olga Safonova, Alexander Guda	Oxygen migration kinetics monitored by the concentration of Ce ³⁺ sites in reducing conditions.	P7
Francesco Giannici , Giuliano Gregori, Chiara Aliotta, Alessandro Longo, Joachim Maier and Antonino Martorana	Local structure and oxygen conductivity in doped ceria	P8

Paolo Ghigna , Elisabetta Achilli, Alberto Vertova, Cristina Locatelli, Sandra Rondinini, Francesco D'Acapito, Alessandro Minguzzi	Mechanism and kinetics of electrochemical processes based on electrocatalysis	P9
Elena Groppo, Erik Gallo, Kalaivani Seenivasan, Kirill A. Lomachenko, Anna Sommazzi, Silvia Bordiga, Pieter Glatzel, Roelof van Silfhout, Anton Kachatkou, Wim Bras, and Carlo Lamberti	Active-Site Generation in Ziegler–Natta Catalysts: a combined XAS and XES study	P10
Aram L. Bugaev, Alexander A. Guda, Andrea Lazzarini, Kirill A. Lomachenko, Vasilij V. Srabionyan, Vladimir P. Dmitriev, Elena Groppo, Jenny G. Vitillo, Riccardo Pellegrini, Lusegen A. Bugaev, Alexander V. Soldatov, Jeroen A. van Bokhoven and Carlo Lamberti	Hydride formation in Pd/C nano-catalysts studied by in situ Pd K-edge XAS and XRPD	P11
Carlo Lamberti , Elisa Borfecchia, Giovanni Agostini, Andrea Lazzarini, Liu Wei, Francesco Giannici, Giuseppe Portale, Alessandro Longo, Elena Groppo	In situ XANES/SAXS simultaneous study of Pd nanoparticles formation inside porous polymeric scaffolds	P12
Marco Calizzi , Giacomo Rossi, Federico Boscherini, Zakaria El Koura, Antonio Miotello, Lucia Amidani and Luca Pasquini	Local structure and oxidation state of Vanadium (V) in V-doped TiO ₂ nanostructured thin films for photocatalytic applications	P13

Synchrotron Radiation for industry and environment

A. Di Cicco, M. Ciambezi, R. Gunnella, M. Minicucci, F. Nobili, M. Pasqualini, M. A. Munoz-Marquez, S. J. Rezvani , A. Trapananti, A. Witkowska	SEI formation in Li-ion electrodes probed by As K-edge X-ray absorption spectroscopy	P14
Angela Trapananti , Gabriele Giuli, Franziska Mueller, Dominic Bresserc, Francesco D'Acapito and Stefano Passerini	Iron- and cobalt-doped ZnO nanoparticles as anode materials for Li-ion batteries	P15

Simone Pollastri , Alessandro F. Gualtieri, Natale Perchiazzi, Alessandro Cavallo, and Andrea Bloise	Mineralogical characterization of mineral fibers	P16
Simona Quartieri , Rossella Arletti, Lara Gigli and Francesco Di Renzo	In-situ synchrotron XRPD study of CO ₂ adsorption in faujasite systems	P17
Simona Quartieri , Rossella Arletti, Paolo Lotti, Giacomo Diego Gatta, Marco Merlini, Vladimir Dmitriev, Giovanna Vezzalini	Pressure-Induced Intrusion and Crystal-fluid Interactions in Porous Materials: the case of Si-Ferrierite	P18

Physics of Advanced Materials

Andrea Basagni , Francesco Sedona, Louis Nicolas, Maurizio Casarin, Carlo A. Pignedoli, Guillaume Vasseur, Jorge Lobo-Checa, Enrique Ortega, Dimas de Oteyza, Manuel Vilas-Varela , Diego Peña Gil, Mauro Sambi	Electronic structure of spatially aligned poly-p-phenylene derivatives on Au(887)	P19
Giorgia Confalonieri , Monica Dapiaggi, Vincenzo Buscaglia, Giovanna Canu and Andrea Bernasconi	Pair Distribution Function structural investigation: BaTi _{1-x} Ce _x O ₃ as a locally disordered perovskite	P20
Paolo Fornasini and Rolly Grisenti	EXAFS and local Thermodynamics	P21
Marianna Gambino , Francesco Giannici, Stefania Di Tommaso , Alessandro Longo and Antonino Martorana	Effect of Ta ⁵⁺ doping on the short-range structure of cubic Bi ₂ O ₃ : a X-Ray Absorption Spectroscopy and Density Functional Theory study	P22
Mattia Giannuzzi , Marco Scavini, Mauro Coduri, Serena Cappelli, Cesare Oliva, Michela Brunelli and Stefano Checchia	Synthesis, Structure, and Magnetism of Multiferroic Spinel Co _{2-x} Bi _x MnO ₄	P23

Marta Pérez-Estébanez, Alberto Viani, Petra Mácová, Alessandro F. Gualtieri, Simone Pollastri and Andrea Palermo	Ti K-edge XANES study of the barium titanosilicates BaTiSi ₂ O ₇ and BaTiSi ₄ O ₁₁	P24
Matteo Rossi , Marco Moretti Sala, K. Ohgushi, A. Al-Zein, Y. Hirata, J. van den Brink and Michael Krisch	Electronic and magnetic excitations in iridates studied by resonant inelastic x-ray scattering	P25
Giacomo Rossi, Enrico Segoloni, Lucia Amidani, Francesco D'Acapito, Federico Boscherini and Maddalena Pedio	Local structure of ZnOEP porphyrin molecular thin films	P26
Adriano Verna , Aleksandr Yu. Petrov, Francesco Offi, Angelo Giglia, Nicola Mahne, Giovanni Stefani, Bruce A. Davidson and Stefano Nannarone	Determination of interface magnetism through X-ray Resonant Magnetic Reflectivity	P27

Biomedical Applications

Nicola Bursi Gandolfi , Simone Pollastri, Alessandro F. Gualtieri	Structural and physical – chemical variation of mineral fibres in histological tissue revealed by synchrotron X-ray diffraction and scanning electron microscopy	P28
Andrea Dalle Vedove , Anna Paola Lucarelli, Valentina Nardone, Angelica Martino, Emilio Parisini	The crystal structure of human P-Cadherin EC1-EC2 provides new insight into the type I cadherin dimerization pathway.	P29