

Jonathan Pellicciari

Curriculum vitae

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Education

- 10/2016- **Doctor of Philosophy in Physics**, *Paul Scherrer Institut and University of Fribourg*,
04/2013 *Switzerland*
- 09/2011- **Master Degree in Chemical Sciences**, *University of Modena and Reggio Emilia, Italy*
09/2009 Grade: 110 (out of 110) *cum laude*
- 09/2009- **Bachelor Degree in Chemistry** *University of Modena and Reggio Emilia, Italy*
09/2006 Grade: 110 (out of 110) *cum laude*
- Schools and Workshops
- 11/2015 How to Write a Competitive Proposal for Horizon 2020, Paul Scherrer Institut, Villigen, Switzerland
- 01/2015 6th MaNEP Winter School, Shedding light on correlated electrons, Saas-Fee, Switzerland
- 04/2014 Lib4RI Training Series: Searching & Managing Scientific Information, Paul Scherrer Institut, Villigen, Switzerland
- 10/2013 Mott Physics Beyond The Heisenberg Model, Monte Verità, Switzerland
- 10/2013 EPICS Training - Controls Section, Paul Scherrer Institut, Villigen, Switzerland
- 08/2013 PSI Summer School on Condensed Matter Research (12th edition), Materials - structure and magnetism, Zuoz, Switzerland

Employment

- 01/2017- **Postdoctoral Fellow**, Massachusetts Institute of Technology, USA
now
- 01/2017- **PhD Student**, Paul Scherrer Institut, Villigen, Switzerland
- 04/2013 Main Duties:
- Group in-house research on strongly correlated systems (iron pnictides, nickelates, cuprates, iridates, ruthenates, vanadates etc) with resonant spectroscopies
 - Collaboration and support to international users
 - Several experiences abroad to conduct experiments not feasible in-house
- 03/2013- **Research Assistant Delprosens**, Modena, Italy
- 07/2012 Employed by Delprosens (<http://www.delprosens.com/>), spin-off of the University of Modena and Reggio Emilia (Italy), to work in the field of electrochemical sensing and in the application of such technologies in the industry.
- Main Duties:
- Develop new electrodic materials and relative electrochemical analytic methods
 - Test and assembly of industrial grade prototypes (hardware and software)
 - In-situ testing of the developed methodologies and devices

06/2012- **Research Assistant, Spinner 2013**, Modena, Italy

09/2011 Started working for Delprosens (<http://www.delprosens.com/>), spin-off of the Electroanalysis' Group of University of Modena and Reggio Emilia, (Italy) (<http://www.electroanalysis.unimo.it/>), with a fellowship provided by Spinner 2013 (<http://www.spinner.it>).

Main Duties:

- Discovery of novel electrodic materials and development of relative electrochemical methods
- Preliminary characterization of the new electrodic materials
- Design and construction of prototypes and devices working in industry

PhD thesis

title **Resonant Inelastic X-Ray Scattering and X-Ray Emission Spectroscopy Studies of Iron Pnictides**

supervisor Dr. Thorsten Schmitt and Prof. Dr. Philipp Aebi

description I employ Fe-L edge Resonant Inelastic X-rays Scattering to study the behaviour of collective spin excitations in different families of iron pnictides superconductors, and as a function of doping and temperature. These studies are complemented with hard X-rays Fe-K edge Absorption and Emission experiments that give insights on the localized magnetism. An additional side project involves the use of Ni-L edge XAS-RIXS to investigate the electronic reconstruction of rare earth nickelates grown as thin films.

Master thesis

title **Graphene-based electrode for the determination of Hydrogen Peroxide**

supervisors Prof. Renato Seeber and Dr. Fabio Terzi

description I synthesized a gold-graphene hybrid electrode with enhanced catalytic performances, and characterized it by means of electrochemical (static and cyclic amperometry), microscopic (AFM), and spectroscopic techniques (Surface Enhanced Raman Spectroscopy). The system was tested in the detection of hydrogen peroxide in several environmental conditions such as pH and matrices.

Bachelor thesis

title **Electron transfer kinetics of mutated Azzuryne blue-copper proteins**

supervisors Prof. Marco Borsari and Dr. Antonio Ranieri

description Differently mutated Azzuryne blue-copper proteins have been absorbed onto a gold electrode and electrochemically characterized by means of cyclic voltammetry. The electrochemical data allowed the determination of thermodynamical and kinetical properties of these mutated proteins as a function of temperature, pH, and mutation. This allowed to partly elucidate the specific biological role of the amino acids in the native protein.

Achievements

- Early PostDoc Mobility Fellowship from Swiss National Science Foundation
- Abilitazione all'esercizio della professione del chimico Sez. A (29-11-2011)
- Spinner Fellowship founded by Regione Emilia-Romagna (2011)
- Erasmus fellowship 2010-2011 for studying abroad
- Grant from Cassa di Risparmio di Cento founding projects abroad (2010-2011)

Languages

- Italian **Native.** *Mother Tongue*
English **Fluent.** *Daily use, all work performed in English*
German **Basic.** *Basic courses taken during PhD*

Skills

Scientific Python, R, Matlab, IgorPro, Origin
Windows, Linux
Latex, Office

Publications

- 2016 *"Presence of magnetic excitations in SmFeAsO"*, **J. Pelliciari**, M. Dantz, Y. Huang, V. N. Strocov, L. Xing, X. Wang, C. Jin, T. Schmitt, *Applied Physics Letters* 109, 122601
- "Magnetic moment evolution and spin freezing in doped BaFe₂As₂"*, **J. Pelliciari**, Y. Huang, K. Ishii, C. Zhang, P. Dai, G. F. Chen, L. Xing, X. Wang, C. Jin, H. Ding, P. Werner, T. Schmitt, arXiv:1607.04038 and submitted
- "Quenched Magnon excitations by oxygen sublattice reconstruction in (SrCuO₂)_n/(SrTiO₃)₂ superlattices"*, M. Dantz, **J. Pelliciari**, D. Samal, V. Bisogni, Y. Huang, P. Olalde-Velasco, V. N. Strocov, G. Koster, T. Schmitt, *Scientific Reports* 6, 32896
- "Orbital engineering in nickelate heterostructures driven by anisotropic oxygen hybridization rather than orbital energy levels"*, G. Fabbris, D. Meyers, J. Okamoto, **J. Pelliciari**, A. S. Disa, Y. Huang, Z.-Y. Chen, W. B. Wu, C. T. Chen, S. Ismail-Beigi, C. H. Ahn, F. J. Walker, D. J. Huang, T. Schmitt, M. P. M. Dean, *Phys. Rev. Lett.* 117, 147401
- "Measurement of collective excitations in VO₂ by resonant inelastic X-ray scattering"*, H. He, A. X. Gray, P. Granitzka, J. W. Jeong, N. P. Aetukuri, R. Kukreja, L. Miao, Y. B. Huang, P. Olalde-Velasco, **J. Pelliciari**, W. F. Schlotter, E. Arenholz, T. Schmitt, M. G. Samant, S. S. P. Parkin, H. A. Dürr, L. A. Wray, arXiv:1603.01164 and accepted by *Phys. Rev. B (R)*
- "Intralayer doping effects on the high-energy magnetic correlations in NaFeAs"*, **J. Pelliciari**, Y. Huang, T. Das, M. Dantz, V. Bisogni, P. Olalde Velasco, V. N. Strocov, L. Xing, X. Wang, C. Jin, and T. Schmitt, *Phys. Rev. B* 93, 134515
- 2015 *"Magnons in tetragonal CuO"*, S. Moser, N. E. Shaik, D. Samal, S. Fatale, B. Dalla Piazza, M. Dantz, **J. Pelliciari**, P. Olalde-Velasco, T. Schmitt, G. Koster, F. Mila, H. M. Rønnow, and M. Grioni *Phys. Rev. B* 92, 140404(R)
- "Correlation of the Superconducting Critical Temperature with Spin and Orbital Excitation Energies In (Ca_xLa_{1-x})(Ba_{1.75-x}La_{0.25+x})Cu₃O_y as Measured by Resonant Inelastic X-ray Scattering"*, D. S. Ellis, Y. Huang, P. Olalde-Velasco, M. Dantz, **J. Pelliciari**, G. Drachuck, R. Ofer, G. Bazalitsky, J. Berger, T. Schmitt, A. Keren, *Phys. Rev. B* 92, 104507
- Collective Nature of Spin Excitations in Superconducting Cuprates Probed by Resonant Inelastic X-Ray Scattering"*, M. Minola, G. Dellea, H. Gretarsson, Y. Y. Peng, T. Lu, J. Porras, T. Løv, F. Yakhou, N. B. Brookes, Y. Huang, **J. Pelliciari**, T. Schmitt, G. Ghiringhelli, B. Keimer, L. Braicovich, M. Le Tacon, *Phys. Rev. Lett.* 114 217003
- "Spin-Orbit-Induced Orbital Excitations in Sr₂RuO₄ and Ca₂RuO₄: A Resonant Inelastic X-ray Scattering Study"*, C. G. Fatuzzo, M. Dantz, S. Fatale, P. Olalde-Velasco, N. E. Shaik, B. Dalla Piazza, S. Toth, **J. Pelliciari**, R. Fittipaldi, A. Vecchione, N. Kikugawa, J. S. Brooks, H. M. Rønnow, M. Grioni, C. Rüegg, T. Schmitt, J. Chang, *Phys. Rev. B* 91, 155104

- 2014 *"Itinerant effects and enhanced magnetic interactions in Bi-based multilayer cuprates"*, M. P. Dean, A. J. A. James, A. C. Walters, V. Bisogni, I. Jarrige, M. Huecker, E. Giannini, M. Fujita, **J. Pellicciari**, Y. Huang, R. M. Konik, T. Schmitt, J. P. Hill, *Phys. Rev. B* 90, 220506(R)
- 2013 *"Behaviour of Ti electrode in the amperometric determination of high concentrations of strong oxidising species"*, F. Terzi, **J. Pellicciari**, B. Zanfognini, L. Pigani, C. Zanardi, R. Seeber, *Electrochemistry Communications* 34, 138
- "Graphene-modified electrode. Determination of Hydrogen peroxide at high concentration"*, F. Terzi, **J. Pellicciari**, C. Zanardi, L. Pigani, A. Viinikanoja, J. Lukkari, R. Seeber, *Analytical and Bioanalytical Chemistry* 405, 3579
- "Amperometric determination of strong oxidising species through titanium electrode systems"*, F. Terzi, B. Zanfognini, **J. Pellicciari**, L. Pigani, C. Zanardi, R. Seeber, *Sensors and Microsystems: Proceedings of the 17th National Conference*, Brescia, Italy, 5-7 February 2013

Communication at congresses

- Invited *"Effect of isovalent doping on magnetism in $BaFe_2(As_{1-x}P_x)_2$ "*, **J. Pellicciari**, Y. Huang, K. Ishii, M. Dantz, P. Olalde Velasco, V. N. Strocov, X. Wang, L. Xing, C. Q. Jin, X. Lu, T. Watashige, S. Kasahara, Y. Matsuda, T. Shibauchi, T. Das, T. Schmitt, Superstripes 2016, June 2016, Ischia, Italy
- Contributed *"Effect of isovalent doping on magnetism in $BaFe_2(As_{1-x}P_x)_2$ "*, **J. Pellicciari**, Y. Huang, K. Ishii, M. Dantz, P. Olalde Velasco, V. N. Strocov, X. Wang, L. Xing, C. Q. Jin, X. Lu, T. Watashige, S. Kasahara, Y. Matsuda, T. Shibauchi, T. Das, T. Schmitt, Workshop on Resonant Inelastic and Elastic X-Ray Scattering 2016, June 2016, Dresden, Germany
- "Resonant Inelastic X-Ray Scattering on Fe pnictides superconductors"*, **J. Pellicciari**, University of Fribourg, May 2016, Fribourg, Switzerland
- "Giant effect of isovalent doping on magnetism in $BaFe_2(As_{1-x}P_x)_2$ "*, **J. Pellicciari**, Y. Huang, K. Ishii, M. Dantz, P. Olalde Velasco, V.N. Strocov, X. Wang, L. Xing, C. Q. Jin, X. Lu, T. Watashige, S. Kasahara, T. Shibauchi, T. Das, and T Schmitt, Spectroscopy of Novel Materials Group Workshop, January 2016, Saas-Grund, Switzerland
- "Intralayer doping effect on high-energy spin fluctuations in electron doped NaFeAs"*, **J. Pellicciari**, Y. Huang, V. Bisogni, P. Olalde Velasco, M. Dantz, T. Das, C. Q. Jin and T. Schmitt, International Conference on Electron Spectroscopy and Structure ICESS-2015, September 2015, Stony Brook, USA
- "Connection between high-energy spin excitations and degree of electron correlations in $Ba(Fe_{1-x}Co_x)_2As_2$ superconductors"*, Y. B. Huang, **J. Pellicciari**, V. Bisogni, Z. P. Yin, P. Olalde Velasco, M. Dantz, K. J. Zhou, G. F. Chen, V. Strocov, G. Kotliar, H. Ding and T. Schmitt, Swiss and Austrian Physical Society Meeting 2015, September 2015, Vienna, Austria
- "Doping dependence of the magnetic excitations in electron doped NaFeAs"*, **J. Pellicciari**, Y. Huang, V. Bisogni, P. Olalde Velasco, M. Dantz, T. Das, C. Q. Jin and T. Schmitt, Swiss and Austrian Physical Society Meeting 2015, September 2015, Vienna, Austria
- "Persistence of high-energy spin fluctuations in electron doped NaFeAs"*, **J. Pellicciari**, Y. Huang, V. Bisogni, P. Olalde Velasco, M. Dantz, T. Das, C. Q. Jin and T. Schmitt, International Conference Magnetism, July 2015, Barcelona, Spain
- "Persistence of high-energy spin fluctuations in electron-doped NaFeAs"*, **J. Pellicciari**, Y. Huang, V. Bisogni, P. Olalde Velasco, M. Dantz, T. Das, C. Q. Jin and T. Schmitt, Deutsche Physikalische Gesellschaft (German Physical Society Meeting), March 2015, Berlin, Germany
- "Persistence of high-energy spin fluctuations in electron doped NaFeAs"*, **J. Pellicciari**, Y. Huang, V. Bisogni, P. Olalde Velasco, M. Dantz, T. Das, C. Q. Jin and T. Schmitt, Swiss Light Source Symposium, February 2015, Villigen, Switzerland

"Collective phenomena probed by RIXS on NaFeAs and Co doped compounds", **J. Pelliciari**, Y. Huang, V. Bisogni, P. Olalde Velasco, M. Dantz, T. Das, C. Q. Jin and T. Schmitt, Spectroscopy of Novel Materials Group Workshop, January 2015, Saas-Grund, Switzerland

"Collective phenomena probed by RIXS on NaFeAs", **J. Pelliciari**, Y. Huang, V. Bisogni, P. Olalde Velasco, M. Dantz, C. Q. Jin and T. Schmitt, European Conference on X-Ray Spectrometry, June 2014, Bologna, Italy

"High energy spin excitations of NaFeAs and Co-doped superconductors probed by Resonant Inelastic X-ray Scattering", **J. Pelliciari**, Y. Huang, V. Bisogni, P. Olalde Velasco, M. Dantz, C. Q. Jin and T. Schmitt, Spectroscopy of Novel Materials Group Workshop, February 2014, Chur, Switzerland

Posters *"Effect of isovalent doping on magnetism in $\text{BaFe}_2(\text{As}_{1-x}\text{P}_x)_2$ "*, **J. Pelliciari**, Y. Huang, K. Ishii, M. Dantz, P. Olalde Velasco, V. N. Strocov, X. Wang, L. Xing, C. Q. Jin, X. Lu, T. Watahige, S. Kasahara, Y. Matsuda, T. Shibauchi, T. Das, T. Schmitt, Vacuum UltraViolet and X-Ray Physics 2016, July 2016, Zurich, Switzerland

"Dispersive magnetic excitations in parent and Co doped Iron-based superconductors", **J. Pelliciari**, Y. Huang, V. Bisogni, P. Olalde Velasco, M. Dantz, C. Q. Jin and T. Schmitt, M2S Materials and Mechanisms of Superconductivity 2015, September 2015, Geneva, Switzerland

"Dispersive magnetic excitations in parent and Co doped Iron-based superconductors", **J. Pelliciari**, Y. Huang, V. Bisogni, P. Olalde Velasco, M. Dantz, C. Q. Jin and T. Schmitt, Swiss Physical Society Meeting, June 2014, Fribourg, Switzerland

Administration

- 01/2015 Organizer of the workshop of the 'Spectroscopy of Novel Materials Group' held in Saas-Grund, Switzerland.
- 03/2014 Co-Organizer of the workshop of the 'Spectroscopy of Novel Materials Group' held in Chur, Switzerland.