

Michela Fratini

Curriculum Vitae

Rome,

August 13, 2015

Part I – General Information

Full Name	Michela Fratini
Date of Birth	April 06 1979
Place of Birth	Rome, Italy
Citizenship	Italian
Address	CNR-Nanotec (Roma unit) c/o Department of Physics, La Sapienza University Piazzale Aldo Moro, 5 00185 Rome Italy IRCCS Fondazione Santa Lucia, MARBILab, Via Ardeatina, 306 00179 Roma - Italy
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Spoken Languages	-Italian (mother tongue); -English (good); -French (basic).

Part II – Education

Type	Year	Institution	Notes (Degree, Experience,...)
Master degree in Physics (Laurea in Fisica)	2004	Sapienza University of Rome (Italy)	-Thesis title: “Mapping of the photoinduced local ordering in non equilibrium system using synchrotron X-ray radiation”
Specialization in Medical Physics	2007	Specialization School of Medical Physics (SSMP) of the University of Rome"La Sapienza"Rome (Italy)	Thesis title: “A New Method For Making A Photo Controlled Superconductor Device For Magnetoencephalogram (MEG) (Rw-Squid)”
PhD degree in Physics	2016	University of Roma Tre	Thesis title: “A New Method For Making A Photo Controlled Superconductor Device For Magnetoencephalogram (MEG) (Rw-Squid)”

Part III – Academic Appointments

Start	End	Institution	Position
Dec 2004	Sept 2005	Sapienza University of Rome (Italy)	Fellowship on topic “Control and manipulation of heterogeneity in complex matter” (COFIN 2003 program).
Dec 2005	Nov 2008	Sapienza University of Rome (Italy)	Fellowship on topic “Controlling Mesoscopic Phase Separation (CoMePhS)” (STRP program funded by the EU, comprising thirteen European Universities or Research Institutes from eight countries).
Mar 2009	Mar 2011	CNR-IFN (Italy)	Post Doctoral fellowship on topic “Advanced X-ray source based on field emitting carbon nanotubes cold cathode (AXIS)” project, SME program funded by the EU.
Mar 2011	Jun 2015	Fermi Center (Italy)	Post Doctoral fellowship on topic “ Spinal cord fMRI modulation”
Jul 2015	Jun 2016	CNR-Nanotec	Post Doctoral fellowship on “VOXEL” project -Volumetric medical X-ray imaging at extremely low dose- (FET OPEN, Project ID: 665207), funded by the EU.

Part IV – Teaching experience

Year	Institution	Lecture/Course
2007-2012	Sapienza University of Rome (Italy)	Tutor for the course of “European Computer Driving Licence (ECDL)” Department of Engineering
2013-2016	Roma Tre Univeristy (Italy)	Teaching assistant for the course on “General physics” for the students of engineering
2013-2016	Sapienza University of Rome (Italy)	Teaching assistant for the course on “Medical physics” for the students of physics

Part V – Awards, Honors and Habilitations

Year	Title
2011	Prize in memory of Zsolt Kajcsos , for the best oral by early stage researchers.
2012	Fonda-Fasella award 2012 , for a young researcher who obtained important results while working at Elettra Sincrotrone Trieste
2013-2019	Habilitation as Associate Professor for 02/B1(Fisica Sperimentale della Materia)

Part VI – Funding Information [grants as PI-principal investigator or I-investigator]

Year	Title	Program	Grant value
2016	Multimodal experimental and theoretical approach for the study of the Spinal Cord in healthy and diseased subjects.	A young researcher project of the Italian Healthy Ministry” GR-2013-02358177	9.50/10

Part VII – Research Activities

Keywords	Brief Description
X-ray synchrotron techniques	Michela Fratini (M.F.) received her master degree in Physics ('04) from Sapienza University of Rome (SUR), with a thesis centered on the study and the manipulation of the intrinsic inhomogeneities of oxide superconductors using high resolution X-ray techniques. She then received the Specialization in Medical Physics at SUR ('04-'08) acquiring skills in the most common diagnostic techniques, in particular in X-ray imaging and magnetic resonance imaging (MRI) techniques.
X-ray micro diffraction	During her specialization thesis she combined her two areas of interest, developing a method for the realization of Magnetencefalography-SQUID devices through the direct writing of μ -sized arrays of Josephson junctions via X-ray photon illumination of high-Tc superconductors.
X-ray tomography	During the specialization thesis she obtained a 3-year fellowship (between 2005-2008) in the CoMePhS (Controlling Mesoscopic Phase Separation) project, a STRP program funded by the EC that comprised thirteen European Universities and Research Institutes from eight countries.
Complex matter	The goal of the project was to understand the inherent phase separation mechanism in manganites, superconductors and related compounds, in order to manipulate their self-organized structure and to use the technique in nanotechnology by creating functional textured states.
Biomaterials	In this framework she established important collaborations with Dr. W. Prellier of the University of Caen and CNRS (CRISMAT) and with G. Aeppli, professor at the University College of London and Director of LCN (London Center for Nanotechnology). These collaborations yielded significant results, published in Nature, Nature Materials and PNAS, included in the highlights of ESRF and Elettra, and covered by popular-science journals like Wired.
Spinal cord	During her specialization she started a very important collaboration with Dr Manfred Burghammer, the scientific responsible of the X-ray microdiffraction beamline (ID13), at ESRF and with Dr L. Barba at ELETTRA. From '09 to '11 she won a fellowship at the Institute of Photonics and Nanotechnologies (IFN), CNR, Rome, in the framework of an European project "AXIS" SME's project to develop a compact X-ray source based on the emerging technology of carbon nanotube field emission for biomedical applications.
	Thanks to this project she established collaborations with York Probe Source (UK), Delong Instruments (Czech rep), Xenocs (France) and Scanco (Switzerland). During the project she was invited to work (for ~1 month in total) in the laboratory of prof. L. Pina at the Techn. Univ. Prague, to assemble the X-ray source with the cathode that had been developed in Rome. In addition she participated in other activities of the IFN group, in particular 1) in X-ray phase contrast tomography (at SYRMEP- ELETTRA) and X-ray microdiffraction experiments on engineered tissue and 2) in the study of intracellular magnesium with X-ray microfluorescence (uFX) and AFM (at APS, ELETTRA and ESRF).
	From '11 to the June 2015 she worked on a fellowship at Enrico Fermi Centre MARBILab/IRCS Fondazione Santa Lucia, to study the spinal cord BOLD modulation with functional MRI. During this period she also participated to the collaboration with Prof. C. A. Porro and Dr. Paul Summers of the Dipartimento di Scienze Biomediche of the University of Modena e Reggio Emilia, taking part to spinal cord fMRI experiments at the NUOVO OSPEDALE CIVILE S. AGOSTINO-ESTENSE DI MODENA. She was involved in the nationally-funded Premiale project NETFUN about the development of advanced quantitative imaging technologies using MRI, and to their application to the characterization of the cerebral functional network in neurodegenerative pathologies in collaboration with Prof. R. Wise of the Brain Research Imaging Centre (CUBRIC) at the School of Psychology- Cardiff University.
	In July 2015 she won a post doc fellowship at the CNR-Nanotech of Rome, in the framework of an European project "Voxel" Fet EU 's project, to study the neuronal network and vascular network in the healthy and diseased Central Nervous System using High resolution X- ray Phase contrast Tomography.
	Most of her experimental work has been based on measurements of XRD, uXRD, EXAFS, XANES, uFX, and X-ray tomography in the following national and international facilities: "Elettra" (IT) (XRD1, XAFS, SYRMEP) "ESRF" (fr) (ID13, BM 26A, BM 28, BM29, ID2 p6), "APS" (USA) (ID2b), PSI-SLS (CH) (PXRD, TOMCAT). In addition, she also participated to several fMRI experiments with a 3 T scanner.
	M.F. is author of 39 peer-reviewed papers, with more than 500 citations and H-index = 12. M.F. also held 15 talks (4 invited). For her work at Elettra, in '12 she was awarded the "Premio Fonda- Fasella", given annually to a young researcher who obtained important results while working at Elettra Sincrotrone Trieste. In addition, she participated to the COST Action MP0601, and in '11 she won Prize in memory of Zsolt Kajcsos for the best oral presentation given by early stage researchers at the COST MP0601 Final Event, held in Paris on 16-18

November 2011. During the course of her academic career, M.F. also displayed a natural inclination for teaching, demonstrated both in the training of numerous Master thesis and PhD. students and in her work as an assistant for several undergraduate courses in biophysics, medical physics and general physics . In December 2013 M.F. has been granted the habilitation as Associate Professor for 02/B1 (Fisica Sperimentale della Materia). During her career, M.F. was a member of the local organizing committees for the following conferences and workshops :

- 1) International School on Magnetic Resonance and Brain Function : Erice 6-May 2011, May 2014
- 2) International Conference on "FeAs High Tc Superconducting Multilayers and Related Phenomena" Superstripes2008 Roma 9-13 December 2008,
- 3) Symposium_COMEPHS EU Project 2008 Roma 11-12 April 2008,
- 4) 5th International Conference Stripes06 December 17-22, 2006

Part VIII – Summary of Scientific Achievements

Product type	N.	Notes	Start	End
Articles (as defined by ISI Web of Science)	39	Database: ISI Web of Science (WoS);	2005	2016
Books Chapters [scientific]	2	See: 1)info:YVAAQhnI1EJ:scholar.google.com 2)info:4Zt4lcDqmGsJ:scholar.google.com	2015	2015
Invited Seminars	1	At ESRF (European Synchrotron Radiation Facility)	2009	2009
Conference papers & Abstracts		Database: ISI WoS	2005	2015

Oral presentations at International conferences, workshops, and Symposia

- 1) M. Fratini et al. Different complementary X-ray techniques coupled to new analytical tools for studying Biomineralization. SILS 2015 Trento 10-15/07/2015
- 2) M. Fratini et al. Simultaneous 3D imaging of the micro-vascular network and neuronal system of the spinal cord in mouse. Biophysics@Rome2015 Rome 28-29/05/2015
- 3) (invited talk) M. Fratini et al. Simultaneous imaging of micro-vascular network and neurons morphology of the spinal cord INTERNATIONAL SCHOOL ON MAGNETIC RESONANCE AND BRAIN FUNCTION XI WORKSHOP Erice 18-25/05/2014
- 4) M. Fratini et al. Study of the vascular network in the spinal cord using advance techniques. Termis EU 2014 chapter meeting 10-13 June 2014 Genova
- 5) (invited talk) M. Fratini et al. X-ray micro-diffraction and phase contrast tomography applied to biomaterials 12th International school and Symposium on Synchrotron Radiation in Natural Science

10-15 June 2014 Warsaw

- 6) "Combination of X-ray micro-diffraction and X-ray phase contrast on engineered tissue". M. Fratini, G. Campi, A. Cedola, MIME-MATERIALS in MEDICINE (Faenza) 8-11/10/ 2013
- 7) (invited talk) "Manipulation and Control of Oxygen interstitials in a Cuprate Superconductor, $\text{La}_2\text{CuO}_{4+y}$, using X-ray diffraction", M. Fratini, G. Campi, A. Bianconi. Science@CERIC workshop, ICT, Adriatica Guesthouse (Trieste) December 11-12 (2012)
- 8) "Towards an Advanced x-ray source based on field emitting Carbon Nanotubes cold cathode: latest update", M. Fratini, S. Iacobucci, A. Rizzo, F. Scarinci, S. Lagomarsino, G. Stefani, Yan Zhang, Mark Mann, William I. Milne. COST MP0601 WG and MC meetings "Short wavelength laboratory sources" Paris, November 16-18 2011 (France)
- 9) "Determination of Mg concentration map in whole cells by nanoprobe techniques", M. Fratini et al. 8th International Conference on Stripes and High Tc Superconductivity STRIPES 11 : " 1° Conference on QUANTUM PHYSICS OF LIVING MATTER", Sapienza University of Rome July 12-13 (2011)
- 10) "AXIS _Advanced x-ray source based on field emitting Carbon Nanotubes cold cathode", M. Fratini, A. Rizzo, S. Iacobucci, M. Ilie, F. Scarinci, S. Lagomarsino, G. Stefani, Yan Zhang, Mark Mann, William I. Milne. INTERNATIONAL CONFERENCE ON NANOSTRUCTURED MATERIALS - NANO 2010, University "La Sapienza" Roma – ITALY September 13 - 17, 2010
- 11) "Advanced x-ray source based on field emitting Carbon Nanotubes cold cathode"; M. Fratini, M. Ilie, F. Scarinci, S. Lagomarsino, A. Rizzo, S. Iacobucci, G. Stefani. COST MP0601 WG and MC meetings "Short wavelength laboratory sources" Smolenice, November 23-24 2009 (Slovakia)

Part IX–Publications

H index=13 (ISI web)

Somma Citazioni 637 (ISI WoS)

Somma Citazioni senza autocitazioni: 577 (ISI WoS)

Citazioni medie per articolo: 13.15 (ISI WoS);

- 1) L. Merolle, E. Malucelli, M. Fratini, A. Gianoncelli, A. Notargiacomo, C. Cappadone,... & S. Lagomarsino, "Repeatability and reproducibility of intracellular molar concentration assessed by synchrotron-based x-ray fluorescence microscopy". In XRM 2014: Proceedings of the 12th International Conference on X-Ray Microscopy (Vol. 1696, p. 020032). AIP Publishing. (2016).
- 2) Fratini, M., Campi, G., Bukreeva, I., Pelliccia, D., Burghammer, M., Tromba, G., ... & Cedola, A. (2015). X-ray micro-beam techniques and phase contrast tomography applied to biomaterials.

Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms,364, 93-97.

3) G. Campi M. Fratini, I. Bukreeva, G. Ciasca, M. Burghammer, F. Brun, G. Tromba, M. Mastrogiacomo, A. Cedola “Imaging collagen packing dynamics during mineralization of engineered bone tissue” *Acta Biomater.* 23, 309 (2015), <http://dx.doi.org/10.1016/j.actbio.2015.05.033>.

4) Michela Fratini, Gaetano Campi, Inna Bukreeva, Daniele Pelliccia, Manfred Burghammer, Giuliana Tromba, Ranieri Cancedda, Maddalena Mastrogiacomo, Alessia Cedola. “X-ray micro-beam techniques and phase contrast tomography applied to biomaterials” *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms* (doi:10.1016/j.nimb.2015.06.023)

5) I Bukreeva, M Fratini, G Campi, D Pelliccia, R Spanò, G Tromba, F Brun, M Burghammer, M Grilli, R Cancedda, A Cedola, M Mastrogiacomo “High-resolution X-ray techniques as new tool to investigate the 3D vascularization of engineered-bone tissue” *Front. Bioeng. Biotechnol.* 3: 133. doi: 10.3389/fbioe

6) D Mascali, M DiNuzzo, T Gili, M Moraschi, M Fratini et al. “Intrinsic Patterns of Coupling between Correlation and Amplitude of Low-Frequency fMRI Fluctuations Are Disrupted in Degenerative Dementia Mainly due to Functional Disconnection” *PlosONE* 10,1-18, (2015).

7) Michela Fratini, Inna Bukreeva, Gaetano Campi, Francesco Brun, Giuliana Tromba, Peter Modregger, Domenico Bucci, Giuseppe Battaglia, Raffaele Spadon, Maddalena Mastrogiacomo, Herwig Requardt, Federico Giove, Alberto Bravin, Alessia Cedola. “Simultaneous submicrometric 3D imaging of the micro-vascular network and the neuronal system in a mouse spinal cord” *Scientific Report* 5, 8514, (2015), DOI: 10.1038/srep08514.

8) Michela Fratini et al. “Carbon-Nanotubes Field Emitter to be Used in Advanced X-ray Source” *Short Wavelength Laboratory Sources*, 358, (2014).

9) I Bukreeva, D Pelliccia, A Cedola, A Sorrentino, F Scarinci, M Ilie, M Fratini, et al. “Theoretical Analysis and Experimental Applications of X-ray Waveguides” *Short Wavelength Laboratory Sources*, 65, (2014).

10) Fratini, M., I. Bukreeva, G. Campi, R. Spano, M. Mastrogiacomo, F. Brun, G. Tromba, F. Giove, and A. Cedola. "Study of the vascular network in the spinal cord using advanced techniques." In *JOURNAL OF TISSUE ENGINEERING AND REGENERATIVE MEDICINE*, vol. 8, pp. 192-193. 111 RIVER ST, HOBOKEN 07030-5774, NJ USA: WILEY-BLACKWELL, (2014).

- 11) G Campi, I Bukreeva, M Fratini, M Mastrogiacomo, A Cedola. "Imaging tissue regeneration/degeneration by combined X-ray micro-diffraction and phase contrast microtomography." In JOURNAL OF TISSUE ENGINEERING AND REGENERATIVE MEDICINE, vol. 8, pp. 66-67. 111 RIVER ST, HOBOKEN 07030-5774, NJ USA: WILEYBLACKWELL, (2014)
- 12) Gaetano Campi, Gabriele Ciasca, Nicola Poccia, Alessandro Ricci, Michela Fratini, Antonio Bianconi, "Controlling Photoinduced Electron Transfer Via Defects Self-Organization for Novel Functional Macromolecular Systems". *Curr Protein Pept Sci.* 14(4): 394–399, (2014).
- 13) Emil Malucelli, Stefano Iotti, Alessandra Gianoncelli, Michela Fratini, Lucia Merolle, Andrea Notargiacomo, Chiara Marraccini, Azzurra Sargenti, Concettina Cappadone, Giovanna Farruggia, Inna Bukreeva, Marco Lombardo, Claudio Trombini, Jeanette Maier, Stefano Lagomarsino, "Quantitative Chemical Imaging of the intracellular spatial distribution of fundamental elements and light metals in single cells" *Analytical chemistry*, 86 (10), 5108– 5115, (2014).
- 14) E. Malucelli, S. Lagomarsino, L. Merolle, C. Marraccini, A. Sargenti, C. Cappadone, G. Farruggia, A. Cedola, M. Fratini, A. Notargiacomo, and S. Iotti, "Magnesium intracellular content and distribution map in drug-resistant and -sensitive whole cells", *J. Biol. Res.* 87, 39 (2014).
- 15) Cedola, G. Campi, D. Pelliccia, I. Bukreeva, M. Fratini, M. Burghammer, L. Rigon, F. Arfelli, R. Chang Chen, D. Dreossi, N. Sodini, S. Mohammadi, G. Tromba, R. Cancedda, and M. Mastrogiacomo, "Three dimensional visualization of engineered bone and soft tissue by combined x-ray micro-diffraction and phase contrast tomography", *Phys. Med. Biol.* 59, 189 (2013).
- 16) M. Fratini, M. Moraschi, B. Maraviglia, and F. Giove, "On the impact of physiological noise in spinal cord functional MRI". *J. Magn. Reson. Imaging* 40, 770–777 (2014), DOI: 10.1002/jmri.24467.
- 17) E. Malucelli, S. Iotti, M. Fratini, C. Marraccini, A. Notargiacomo, A. Gianoncelli, I. Bukreeva, A. Cedola, J. Maier, G. Farruggia, C. Cappadone, L. Merolle, F. Wolf, V. Trapani, and S. Lagomarsino, "X-ray fluorescence microscopy of light elements in cells: self-absorption correction by integration of compositional and morphological measurements", *J. Phys.: Conf. Ser.* 463, 012022 (2013).
- 18) G. Campi, G. Pezzotti, M. Fratini, A. Ricci, M. Burghammer, R. Cancedda, M. Mastrogiacomo, I. Bukreeva, and A. Cedola, "Imaging regenerating bone tissue based on neural networks applied to micro-diffraction measurements", *Appl. Phys. Lett.* 103, 253703 (2013).
- 19) N. Poccia, A. Bianconi, G. Campi, M. Fratini, and A. Ricci, "Size evolution of the oxygen interstitial nanowires in $\text{La}_2\text{CuO}_{4+y}$ by thermal treatments and x-ray continuous illumination", *Supercond. Sci. Technol.* 25, 124004 (2012).

- 20) N. Poccia, A. Ricci, G. Campi, M. Fratini, A. Puri, D. Di Gioacchino, A. Marcelli, M. Reynolds, M. Burghammer, N. L. Saini, G. Aeppli, and A. Bianconi, “Optimum inhomogeneity of local lattice distortions in $\text{La}_2\text{CuO}_{4+y}$ ”, *P. Natl. Acad. Sci. Usa* 109, 15685 (2012).
- 21) A. Iadecola, B. Joseph, L. Simonelli, L. Maugeri, M. Fratini, A. Martinelli, A. Palenzona, M. Putti, and N. L. Saini, “Effect of Ru substitution on atomic displacements in the layered $\text{SmFe}_{1-x}\text{Ru}_x\text{AsO}_{0.85}\text{F}_{0.15}$ superconductor”, *Phys. Rev. B* 85, 214530 (2012).
- 22) S. Iacobucci, M. Fratini, A. Rizzo, F. Scarinci, Y. Zhang, M. Mann, C. Li, W. I. Milne, M. M. El Gomati, S. Lagomarsino, and G. Stefani, “Angular distribution of field emitted electrons from vertically aligned carbon nanotube arrays”, *Appl. Phys. Lett.* 100, 053116 (2012).
- 23) S. Iacobucci, M. Fratini, A. Rizzo, F. Scarinci, Y. Zhang, M. Mann, C. Li, W. I. Milne, M. M. El Gomati, S. Lagomarsino, and G. Stefani, “Publisher’s Note: “Angular distribution of field emitted electrons from vertically aligned carbon nanotube arrays” [*Appl. Phys. Lett.* 100, 053116 (2012)]”, *Appl. Phys. Lett.* 100, 259901 (2012).
- 24) S. Lagomarsino, S. Iotti, G. Farruggia, V. Trapani, A. Cedola, M. Fratini, I. Bukreeva, L. Mastrototaro, A. Notargiacomo, I. McNulty, S. Vogt, S. Kim, D. Legnini, J. A. M. Maier, F. Wolf, I. McNulty, C. Eyberger, and B. Lai, “Combined X-ray Microfluorescence and Atomic Force Microscopy Studies of Mg Distribution in Whole Cells” in *The 10th International Conference on X-Ray Microscopy*, AIP Conf. Proc. 1365, pp. 395–398 (2011).
- 25) S. Lagomarsino, S. Iotti, G. Farruggia, A. Cedola, V. Trapani, M. Fratini, I. Bukreeva, A. Notargiacomo, L. Mastrototaro, C. Marraccini, A. Sorrentino, I. McNulty, S. Vogt, D. Legnini, S. Kim, A. Gianoncelli, J. A. M. Maier, and F. I. Wolf, “Intracellular concentration map of magnesium in whole cells by combined use of X-ray fluorescence microscopy and atomic force microscopy”, *Spectrochimica Acta Part B: Atomic Spectroscopy* 66, 834 (2011).
- 26) N. Poccia, G. Campi, M. Fratini, A. Ricci, N. L. Saini, and A. Bianconi, “Spatial inhomogeneity and planar symmetry breaking of the lattice incommensurate supermodulation in the high absorption temperature superconductor $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+y}$ ”, *Phys. Rev. B* 84, 100504 (2011).
- 27) N. Poccia, M. Fratini, A. Ricci, G. Campi, L. Barba, A. Vittorini-Orgeas, G. Bianconi, G. Aeppli, and A. Bianconi, “Evolution and control of oxygen order in a cuprate superconductor”, *Nat. Mater.* 10, 733 (2011).
- 28) G. Campi, A. Mari, A. Pifferi, H. Amenitsch, M. Fratini, and L. Suber, “Control of silver-polymer aggregation mechanism by primary particle spatial correlations in dynamic fractal-like geometry”, *Nanoscale* 3, 3774 (2011).
- 29) M. Fratini, N. Poccia, A. Ricci, G. Campi, M. Burghammer, G. Aeppli, and A. Bianconi, “Scalefree structural organization of oxygen interstitials in $\text{La}_2\text{CuO}_{4+y}$ ”, *Nature* 466, 841 (2010).

- 30) B. Joseph, A. Iadecola, M. Fratini, A. Bianconi, A. Marcelli, and N. L. Saini, "RE L3 x-ray absorption study of $\text{REO}_{1-x}\text{F}_x\text{FeAs}$ (RE=La, Pr, Nd, Sm) oxypnictides", *J. Phys.-Condens. Mat.* 21, 432201 (2009).
- 31) A. Iadecola, S. Agrestini, M. Filippi, L. Simonelli, M. Fratini, B. Joseph, D. Mahajan, and N. L. Saini, "Local structure of ReFeAsO (Re=La, Pr, Nd, Sm) oxypnictides studied by Fe K-edge EXAFS", *Europhys. Lett.* 87, 26005 (2009).
- 32) L. Simonelli, V. Palmisano, M. Fratini, M. Filippi, P. Parisiades, D. Lampakis, E. Liarokapis, and A. Bianconi, "Isotope effect on the E_{2g} phonon and mesoscopic phase separation near the electronic topological transition in $\text{Mg}_{1-x}\text{Al}_x\text{B}_2$ ", *Phys. Rev. B* 80, 014520 (2009).
- 33) A. Ricci, M. Fratini, and A. Bianconi, "The Tetragonal to Orthorhombic Structural Phase Transition in Multiband FeAs-based Superconductors", *J. Supercond. Nov. Magn.* 22, 305 (2009).
- 34) N. Poccia and M. Fratini, "The Misfit Strain Critical Point in the 3D Phase Diagrams of Cuprates", *J. Supercond. Nov. Magn.* 22, 299 (2009).
- 35) A. Bianconi, R. Caivano, N. Poccia, A. Ricci, A. Puri, and M. Fratini, "Evading Quantum De-coherence in Living Matter by Feshbach Resonance", *Origins Life Evol. B* 39, 334 (2009).
- 36) D. Di Gioacchino, A. Marcelli, S. Zhang, M. Fratini, N. Poccia, A. Ricci, and A. Bianconi, "Flux Dynamics in $\text{NdO}_{1-x}\text{F}_x\text{FeAs}$ Bulk Sample", *J. Supercond. Nov. Magn.* 22, 549 (2009).
- 37) D. Innocenti, A. Ricci, N. Poccia, G. Campi, M. Fratini, and A. Bianconi, "A Model for Liquid-Striped Liquid Phase Separation in Liquids of Anisotropic Polarons", *J. Supercond. Nov. Magn.* 22, 529 (2009).
- 38) A. Ricci, N. Poccia, G. Ciasca, M. Fratini, and A. Bianconi, "The Microstrain-Doping Phase Diagram of the Iron Pnictides: Heterostructures at Atomic Limit", *J. Supercond. Nov. Magn.* 22, 589 (2009).
- 39) R. Caivano, M. Fratini, N. Poccia, A. Ricci, A. Puri, Z.-A. Ren, X.-L. Dong, J. Yang, W. Lu, Z. X. Zhao, L. Barba, and A. Bianconi, "Feshbach resonance and mesoscopic phase separation near a quantum critical point in multiband FeAs-based superconductors", *Supercond. Sci. Technol.* 22, 014004 (2008).
- 40) V. Palmisano, L. Simonelli, A. Puri, M. Fratini, Y. Busby, P. Parisiades, E. Liarokapis, M. Brunelli, A. N. Fitch, and A. Bianconi, "Controlling mesoscopic phase separation near electronic topological transitions via quenched disorder in ternary diborides", *J. Phys.-Condens. Mat.* 20, 434222 (2008).
- 41) M. Fratini, R. Caivano, A. Puri, A. Ricci, Z.-A. Ren, X.-L. Dong, J. Yang, W. Lu, Z.-X. Zhao, L. Barba, G. Arrighetti, M. Polentarutti, and A. Bianconi, "The effect of internal pressure on the

tetragonal to monoclinic structural phase transition in ReOFeAs: the case of NdOFeAs”, *Supercond. Sci. Technol.* 21, 092002 (2008).

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43) M. Fratini, G. Campi, L. Barba, Y. Busby, M. Filippi, W. Prellier, V. Palmisano, L. Simonelli, N. L. Saini, and A. Bianconi, “Manipulation of Mesoscopic Phase Separation by X-ray Illumination”, *J. Supercond. Nov. Magn.* 20, 551 (2007).

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