

Alessia Cedola



Personal Data:

Born in Rome, Italy, in June 21, 1969, Italian citizen, married, two children.

Actual position: permanent scientists at Institute of Nanotechnology- *Laboratory for Soft and Living Matter*, of the National Research Council (CNR) in Rome.

Enabled Associate Professor of Experimental Physics .

Academic Studies:

[1999] PhD degree at the University " Joseph Fourier" in Grenoble (France), summa cum laude. Experimental thesis at European Synchrotron Radiation Facility (ESRF).

Main research interests:

X-ray imaging, X-ray Phase Contrast Imaging and Tomography, Biomedical applications.

Communications

More than 15 invited oral communications and 2 Plenary Sessions in national and in international conferences. More than 40 oral communications and posters in international conferences.

Other professional activities

Projects responsibility

2008-2012 Responsible for the C.N.R. research line MD.P03 (Commissa): Nanodiffrazione e nanoimaging con raggi X.

2006-2008 Responsible for the C.N.R. research line MD.P03.012 (Commissa): ‘Metodologie avanzate con raggi X e loro applicazioni’.

2007-2008 Responsible for the project MAMBO 2 of INFN for the Roma1 section of INFN.

2008-2010 Responsible for the project BEATS of INFN for the Roma1 section of INFN.

2010-2012 Responsible for the project BEATS 2 of INFN for the Roma1 section of INFN.

2015-2019 Responsible of the H2020 FET-Open *VOXEL* 665207 project.

2016-2018 Responsible for Marie Skłodowska-Curie Individual Fellowships (*BiominaB-3D*).

Participation to measurement campaigns and projects:

1. Responsible of almost 25 financed measurement campaigns at Italian and European synchrotron radiation facilities;
2. Participations to 35 financed measurement campaigns at ESRF.
3. Participation to 10 financed projects, including:
 - European Project of 7th FP. AXIS: (Advanced X-Ray source based on field emitting carbon nanotubes cold cathodes), Total budget: 1.434.235. From 2008 to 2011.
 - Italian Minister, Project: SPARX - Sorgente Pulsata e Amplificata di Radiazione X, Total budget: 13.835.800. From 2001 to 2005.
 - Italian Minister, Project: SPARC - Sorgente Pulsata e Amplificata di Radiazione Coerente, Total budget: 9.554.453. From 2002 to 2006.

Formation and teaching activity:

1. Supervisor of several Laurea Thesis and PhD thesis for the Universities: ROMA TRE and Sapienza in Rome;
2. Referee of one PhD thesis for the University of Trieste.
3. Responsible for several scientific contracts for young researchers.
4. Teacher at the international schools: **ADVANCED BIOMATERIALS BIOMIMETICS, TISSUE ENGINEERING**, Jesi-Ancona, Italy.

Organization activity:

1. Chair of the workshop 'XMNP 2007'. Erice (ITALY), June 2007.
2. Chair of the workshop 'XMNP 2009'. Palinuro (ITALY), June 2009.
3. Chair of the symposium: **Advanced techniques and complex mental approaches to the NMR** applied on the brain and spinal cord inside *the 11th Workshop of International School on Magnetic Resonance and Brain Function*, Erice (Sicily) on May 18th – 25th, 2014.
4. Chair of the symposium: **Advanced techniques for investigating engineered tissues** inside TERMIS 2014, Genoa 10-13 June 2014.
5. Chair of the Workshop: **Coherent & Incoherent X-ray Imaging and Tomography**, on Rome, May 14th-16th 2014.
6. Chair of the symposium: *Imaging and tomography techniques by neutrons and X-rays* at the **European Crystallographic Meeting-** August 23-28, 2015 Rovinj, Croatia

Scientific roles:

1. Responsible of the X-ray physics group since 2012.
2. 2007-2011-Member of the Management Committee of the ESF project COST (MP0601).
3. 2012-2016 -Member of the Management Committee of the ESF COST project (MP1203).
4. Member of the Scientific Committee of the Workshop: XMNP 2009, Palinuro (Salerno - Italy)
5. Member of the Scientific Committee of the Workshop: XMNP 2007, Erice (ITALY).
6. Member of the Scientific Committee of the conference X-TOP.
7. Member of the Scientific Committee of the annual international conference BIOIMAGING.
8. Referee of several scientific journals (APL, PMB, ACTA BIOMATERIALIA, Nanoscale, Optics Express, Scientific Reports) and European projects.
9. 2015- Member of the Editorial Board of Scientific Reports.

Metrics:

Publications

Author of about 100 publications referenced on the ISI web of Science, with over 1100 citations including articles in Nature, Scientific Reports, Biomaterials, Acta Biomaterialia, Physical Review Letters, Optics Letters.

h-index: 18 (ISI)

Last five years publications

2010

1. Inna Bukreeva, Daniele Pelliccia, Alessia Cedola, Fernando Scarinci, Mihaela Ilie, Cinzia Giannini, Liberato De Caro and Stefano Lagomarsino, *Analysis of tapered front-coupling X-ray Waveguides*, Journal of Synchrotron Radiation **17**, 61-68, 2010. **i.f. 2.333**
2. F. Bonfigli, S. Almaviva, A. Cedola, I. Franzini, S. Lagomarsino, D. Pelliccia and R.M. Montereali, *Visible emitting color centers in lithium fluoride for X-ray imaging applications*, Radiation Measurement Volume 45, Issue 2, Pages 147-252 (February 2010) **i.f. 1.477**
3. Daniele Pelliccia, Andrea Sorrentino, Inna Bukreeva, Alessia Cedola, Fernando Scarinci, Mihaela Ilie, Anna Maria Gerardino, Michela Fratini and Stefano Lagomarsino, *X-ray phase contrast microscopy at 300 nm resolution with laboratory sources*, Optics Express, 2010 Vol. 18, No. 15, 15998-16004 2010 **i.f. 4.01**
4. A. Guagliardi, A. Cedola, C. Giannini, M. Ladisa, A. Cervellino, A. Sorrentino, S. Lagomarsino, R. Cancedda and M. Mastrogiacomo, *DEBYE FUNCTION ANALYSIS AND 2D IMAGING OF NANOSCALED ENGINEERED BONE*, Biomaterials Volume 31, Issue 32, November 2010, Pages 8289-8298. **i.f. 4.7**
5. R M Montereali, S Almaviva, F Bonfigli, I Franzini, D Pelliccia, A Cedola and S Lagomarsino, *F and F-aggregates colour centres in lithium fluoride for high spatial resolution x-ray imaging*, *J. Phys.: Conf. Ser.* 249 012003, 2010 .

2011

1. Inna Bukreeva, Alessia Cedola, Andrea Sorrentino, Daniele Pelliccia, I. Asadchikov and Stefano Lagomarsino, Resonance modes filtering in structured X-ray waveguides, Optics Letters, Vol. 36, Issue 14, pp. 2602-2604 (2011)
2. 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, and F. Wolf Combined X-ray Microfluorescence and Atomic Force Microscopy Studies of Mg Distribution in Whole Cells AIP Conf. Proc. -- September 9, 2011 -- Volume 1365, pp. 395-398
3. Stefano Lagomarsino, Stefano Iotti, Giovanna Farruggia, Alessia Cedola, Valentina Trapani, Michela Fratini, Inna Bukreeva, Andrea Notargiacomo, Lucia Mastrototaro, Ian McNulty, Stefan Vogt, Daniel Legnini, Sangsoo Kim, Jeanette A M Maier & Federica I Wolf, *Mapping cellular magnesium using X-ray microfluorescence and atomic force microscopy*, Spectrochimica Acta Part B-Atomic Spectroscopy Volume: 66 Issue: 11-12 Pages: 834-840, 2011.

2012

1. Daniele Pelliccia, David M. Paganin, Andrea Sorrentino, Alessia Cedola, Inna Bukreeva, Stefano Lagomarsino, *Iterative retrieval of one-dimensional x-ray wave field using a single intensity measurement*, Optics Letters Volume: 37 Issue: 2 Pages: 262-264, 2012.
2. G. Campi^a, A. Ricci^{a, b}, A. Guagliardi^c, C. Giannini^c, S. Lagomarsino^d, R. Cancedda^e, M. Mastrogiacomo^e, and A. Cedola^f, *Early stage mineralization in tissue engineering mapped by high resolution X-ray microdiffraction*, Acta Biomaterialia 8 (2012) 3411–3418.
3. F. Arfelli, D. Pelliccia, A. Cedola, A. Astolfo, I. Bukreeva, P. Cardarelli, D. Dreossi, S. Lagomarsino, R. Longo, L. Rigon, N. Sodini, R.H. Menk (2012) "Recent developments on techniques for differential phase imaging at the medical beamline of ELETTRA" in 7th Medical Applications of Synchrotron Radiation, 17-20/10/2012.

2013

1. Inna Bukreeva, Andrea Sorrentino, Alessia Cedola, Ennio Giovine Ana Diaz, Fernando Scarinci, Werner Jark, Leonid Ognev and Stefano Lagomarsino, *Periodically structured X-ray waveguides* Journal of Synchrotron Radiation, Volume 20, Part 5, pages 691-697, 2013.
2. Daniele Pelliccia, Luigi Rigon, Fulvia Arfelli, Ralf-Hendrik Menk, Inna Bukreeva, Alessia Cedola, *A three-image algorithm for hard x-ray grating interferometry*, OPTICS EXPRESS Volume: 21 Issue: 16 Pages: 19401-19411 DOI: 10.1364/OE.21.019401 Published: AUG 12 2013 (impact factor: 3.59). 08/2013; 21:19401-19411.
3. Ciasca, G ; Businaro, L ; De Ninno, A ; Cedola, A ; Notargiacomo, A ; Campi, G ; Papi, M ; Ranieri, A¹ ; Carta, S ; Giovine, E ; Gerardino, A , *Wet sample confinement by superhydrophobic patterned surfaces for combined X-ray fluorescence and X-ray phase contrast imaging* MICROELECTRONIC ENGINEERING Volume: 111 Pages: 304-309, 2013
4. F Arfelli, D Pelliccia, A Cedola, A Astolfo, I Bukreeva, P Cardarelli, D Dreossi, S Lagomarsino, R Longo, L Rigon, N Sodini, R H Menk, *Recent developments on techniques for differential phase imaging at the medical beamline of ELETTRA*, Journal of Instrumentation. Volume: 8 Article Number: C06001 DOI: 10.1088/1748-0221/8/06/C06001 Published: JUN 2013 01/2013; 8(06):C06001.

2014

1. Cedola, Alessia; Campi, Gaetano; Pelliccia, Daniele; et al., *Three dimensional visualization of engineered bone and soft tissue by combined x-ray micro-diffraction and phase contrast tomography*, PHYSICS IN MEDICINE AND BIOLOGY Volume:59 Issue:1 Pages: 189-201 Published: JAN 6 2014.
2. Campi, G; Bukreeva, I; Fratini, M; Mastrogiacomo, M; Cedola, A, *Imaging tissue regeneration/degeneration by combined X-ray micro-diffraction and phase contrast micro-tomography*, JOURNAL OF TISSUE ENGINEERING AND REGENERATIVE MEDICINE Volume: 8 Special-Issue: SI Supplement: 1 Pages:66-67 Meeting Abstract: OP51 Published: JUN 2014
3. Fratini, M; Bukreeva, I; Campi, G; Spano', R ; Mastrogiacomo, M; Brun, F; Tromba, G; Giove, F; Cedola, A. *Study of the vascular network in the spinal cord using advanced techniques*, JOURNAL OF TISSUE ENGINEERING AND REGENERATIVE MEDICINE Volume: 8, Special Issue:SI Supplement:1, Pages:192-193, Meeting Abstract: OP280 Published: JUN 2014.
5. Spano, R; Bukreeva, I; Campi, G ; Tromba, G ; Brun, F ; Cedola, A; Cancedda, R; Mastrogiacomo, M, *Vascular network visualization in bone tissue engineered construct by synchrotron X-ray microtomography*, JOURNAL OF TISSUE ENGINEERING AND REGENERATIVE MEDICINE Volume: 8 Special Issue:SI Supplement:1 Pages:211-211, Meeting Abstract: PP8, Published: JUN 2014.

2015

1. M. Fratini, I. Bukreeva, G. Campi, F. Brun, G. Tromba, P. Modregger, D. Bucci, G. Battaglia, R. Spanò, M. Mastrogiacomo, H. Requardt, F. Giove, A. Bravin & A. Cedola , *Simultaneous submicrometric 3D imaging of the micro-vascular network and the neuronal system in a mouse spinal cord*, Scientific Report 5, Article number: 8514 doi:10.1038/srep08514.
2. G. Campi, M. Fratini, I. Bukreeva, G. Ciasca, M. Burghammer, F. Brun, G. Tromba, M. Mastrogiacomo, and A. Cedola, *Imaging collagen packing dynamics during mineralization of engineered bone tissue* ACTA BIOMATERIALIA Volume: 23 Pages: 309-316 Published: SEP 1 2015.
3. Bukreeva, Inna; Fratini, Michela; Campi, Gaetano; et al. *High-Resolution X-Ray Techniques as New Tool to Investigate the 3D Vascularization of Engineered-Bone Tissue.*, Frontiers in bioengineering and biotechnology Volume: 3 Pages: 133 Published: 2015.
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, 2015.