

Andrei Fluerasu

CONTACT INFORMATION	Brookhaven National Laboratory Photon Sciences Directorate Bldg. 817, Upton, NY 11973 USA	<i>Mobile:</i> +1-631-578-5471 <i>E-mail:</i> fluerasu@bnl.gov <i>https://pubweb.bnl.gov/~fluerasu</i>
RESEARCH INTERESTS	Condensed Matter Physics and Materials Science with particular focus on experimental studies of “mesoscale” dynamics in materials: equilibrium and out-of-equilibrium dynamics in complex fluids, colloidal liquids, glasses and gels, polymer gels and polymer interfaces Studies of dynamics in complex fluids under flow/shear Biophysical applications: dynamics of proteins Instrumentation for coherent X-ray scattering	
EDUCATION	Ph.D. , Physics, McGill University, 2003 <ul style="list-style-type: none">• Thesis: <i>Coherent X-ray Studies on Non-Equilibrium Processes</i>• Adviser: Professor Mark Sutton M.Sc. , Applied Physics, New Jersey Institute of Technology, 1996 <ul style="list-style-type: none">• Thesis: <i>Gas sensing mechanism in Tin-oxide based gas sensors</i>• Adviser: Professor Ken Chin B.S. , Physics University of Bucharest 1994 <ul style="list-style-type: none">• Graduated in top 5% of my class of >300 students with a GPA of 9.2/10• Diploma Thesis: <i>Tin-oxide based gas sensors</i>• Advisor: Prof. Nicolae Barsan	
ACADEMIC APPOINTMENTS	Brookhaven National Laboratory , Upton, NY Coherent Hard X-ray Scattering Group, Photon Sciences,	
	Physicist and Group Leader	Sept 2011 – present
	Associate Physicist and Group Leader	Jan 2009 – Sept 2011
	<ul style="list-style-type: none">• Responsibility consist in managing all aspects of the design, construction, and commissioning of the CHX beamline, and in developing the associated R&D program, and the users community.• Conducting a research program at major international synchrotron facilities focused on studies of dynamics of materials.• Supervising the work of a research group consisting in Scientists, Engineers, Post-docs and PhD students.	

European Synchrotron Radiation Facility, Grenoble, France

Visiting Scientist Jan 2009 – Jan 2011
Scientist Aug 2007 – Dec 2008
Junior Scientist Nov 2006 – Aug 2007
Post-doc Nov 2003 – Oct 2006

- Contribution to the in-house beamline maintenance and development program; provided assistance for user experiments; contributions to the in-house R&D at the ID10 (Troika) beamline.
- Developed an independent research program focused on studies of dynamics in soft-matter systems
- Supervised the research work for one Physics Honors Thesis student
- Supervised the Summer research work of two Physics students

McGill University, Montreal, Canada Jan 1999 – Oct 2003

Ph.D. work: experimental studies of non-equilibrium dynamics during phase-ordering in Cu₃Au with coherent X-ray scattering

Rutgers University, New Brunswick, NJ Aug 1998 – Dec 1998

Ph.D. work in experimental surface science; transferred to McGill, Jan. 99

NJIT, Newark, NJ Aug 1995 – June 1996

M.Sc. work: Experimental and theoretical studies of gas-sensing mechanisms in tin-dioxide based gas sensors

PROFESSIONAL EXPERIENCE **GE Power**, Montreal, Canada, Jun 1996 – Aug 1998
R&D on solid state gas sensors

- Contributed to the design and fabrication of Si-based metal-oxide-semiconductor (MOS) devices for gas sensing in high power transformers
- designed and built sensor testing methodology and instrumentation, including control and data analysis software
- Developed a reliable (stable and selective) MOS hydrogen sensor prototype.

Val Infonet srl, Bucharest, Romania 1993 – 1995

Database programming

SUPERVISION

- Luxi Li, Post-Doctoral Research Associate, Brookhaven National Laboratory, NY, Mar. 2011-present
- Pawel Kwasniewski, Ph.D. Université Joseph Fourier / ESRF, Grenoble, France Apr. 2009-Jun. 2012 (Ph.D. work co-supervised with Dr. Anders Madsen, European XFEL, Hamburg, Germany and Prof. C. Quillet, Univ. J. Fourier, Grenoble)
- Davide Orsi, Laurea Thesis work, University of Parma, Italy / ESRF, Grenoble, France

- Sebastian Busch, Technical University Munich, Germany / ESRF, Grenoble, France, summer research project, May-Aug. 2007
- Torben Jensen, University of Copenhagen, Denmark / ESRF, Grenoble, France, summer research project, May-Aug. 2006

TEACHING
EXPERIENCE

- Teaching Assistant for Physics 142 (general physics course for science students), Department of Physics, McGill University, 1999-2002: I taught weekly tutorials for classes of 20-30 students, review tutorials for classes of 60-100 students, and I occasionally lectured for an audience of 300+ students.
- Private Tutor through the McGill Tutorial Center, McGill University, 2000-2003: tutor for general physics, statics (civil engineering), calculus and more advanced topics such as quantum mechanics, statistical physics, optics, and partial differential equations.
- Laboratory Instructor, Department of Physics, Rutgers University, fall 1998: I was in charge of teaching and grading a first-year laboratory course.
- Teaching Assistant, Department of Physics, New Jersey Institute of Technology, 1995-1996: Laboratory instructor for a general physics course.
- Physics Teacher, Mihai Viteazul High School, Bucharest, Romania, spring 1995: I taught physics classes to senior high school students. Topics included: optics, elements of electronics, introductory atomic and nuclear physics and introduction to special relativity.

Other relevant experience

- Lucent Project Collaboration, Montreal, spring 2001. Provided scientific consulting to a multidisciplinary team consisting of elementary school teachers, science graduate students and graduate students in education for the design of a program aiming to introduce elementary school students to scientific concepts.

SERVICE

Co-proposer and member of beamline development teams for several future (accepted by science advisory committees and management) NSLS-II beamlines:

- [Soft Matter Interfaces](#) beamline, PI: Dr. Ben Ocko, Brookhaven National Laboratory
- [In-situ and resonant scattering](#) beamline, PI: Prof. Karl Ludwig, Boston University
- [Complex materials scattering](#) beamline, PI: Dr. Kevin Yager, Brookhaven National Laboratory

Co-organizer (with Dr. Konstantin Kaznatcheev, BNL) of a workshop on *Wavefront Preserving Optics for High Brightness Light Sources* at the

16th Pan-American Synchrotron Radiation Instrumentation Conference,
Argonne National Laboratory, Sept 21-42, 2010

Referee Service

- *Journal of Chemical Physics*
- *Synchrotron Radiation Instrumentation* Conferences
- *Journal of Synchrotron Radiation*
- *Nuclear Instruments and Methods in Physics A*
- The US Department of Energy
- National Science and Engineering Research Council (NSERC) Canada
- Netherlands Organization for Scientific Research (NWO)
- Beamline Reviews for the Advanced Photon Source, Argonne National Laboratory, IL

FUNDING

Research Grants

- Department of Energy, BNL LDRD 11-025
(PI: A. Fluerasu, \$460k) 2011-2013
- Department of Energy, BNL LDRD
(PI: A. Nomerowski) 2013-2015

Selected Experiment Proposals (as PI)

- *Protein Microcrystal Dynamics by Coherent X-ray Scattering*,
Advanced Photon Source, Argonne National Laboratory Apr. 2012,
Dec. 2012
- *X-ray Speckle Visibility Spectroscopy: A new tool to study dynamics at
3rd generation light sources*
European Synchrotron Radiation Facility Apr. 2010
- *X-ray Photon Correlation Spectroscopy under flow*
European Synchrotron Radiation Facility Oct. 2009
- *Microfluidics technologies combined with Xray scattering techniques for
studying dynamical processes in soft condensed matter* (with J.B. Salmon,
Bordeaux) European Synchrotron Radiation Facility Long Term Pro-
posal 2007-2010
- *Non-equilibrium dynamics in transient gels*
European Synchrotron Radiation Facility Sept. 2006
- *X-ray Photon Correlation Spectroscopy under flow*
European Synchrotron Radiation Facility 2005

AWARDS

- Soros Travel grant, awarded by the Soros Foundation for traveling to
the US to start graduate studies Aug 1995
- First class merit fellowship by Romanian Government (granted to the
top 5% of the students) 1990-1994
- 1st Prize for Theoretical Physics, National contest for student scientific
papers Jul 1989

REFERENCES Available upon request

REFEREED
PUBLICATIONS

- A. Fluerasu, L. Lurio, S. Malkova, D. Liang, M. Mukhopadhyay, S. Narayanan, S.B. Darlingr, M. Sutton, J. Lal, Depth Dependent Mechanism of Polymer-Polymer Dewetting, *to be submitted*
- R. Angelini, L. Zulian, A. Fluerasu, A. Madsen, A. Moussaïd, G. Ruocco, B. Ruzicka, Dichotomic aging behaviour in a Colloidal Glass, *to be submitted*
- O. Chubar, A. Fluerasu, Y.S. Chu, L. Berman, L. Wiegart, W.-K. Lee, J. Baltser, Experimental characterization of X-ray transverse coherence in the presence of beam transport optics, *Journal of Physics, Conf. Ser.*, *in press* (2013)
- O. Chubar, A. Fluerasu, L. Berman, K. Kaznatcheev, L. Wiegart, Wavefront propagation simulations for beamlines and experiments with "Synchrotron Radiation Workshop", *Journal of Physics, Conf. Ser.*, *in press* (2013)
- A. Fluerasu, O. Chubar, K. Kaznatcheev, J. Baltser, L. Wiegart, K. Evans-Lutterodt, M. Carlucci-Dayton, L. Berman, Analysis of the optical design of the NSLS-II coherent hard x-ray beamline, *Proceedings of the SPIE - The International Society for Optical Engineering*, 8141 (2011)
- D. Orsi, A. Fluerasu, A. Moussaïd, F.Zontone, L. Cristofolini, A. Madsen, Dynamics in dense hard-sphere colloidal suspensions studied by X-ray Photon Correlation Spectroscopy, *Phys. Rev. E* **85**, 011402 (2012)
- K. Laszlo, A. Fluerasu, A. Moussaïd, E. Geissler, Deswelling kinetics of PNIPA gels, *Macromolecular Symposia* *in press* (2011)
- K. Laszlo, A. Fluerasu, A. Moussaïd, E. Geissler, Kinetics of jammed systems: PNIPA gel *Soft Matter* **6**, 4335 (2010)
- A. Fluerasu, P. Kwasniewski, C. Caronna, F. Destremaut, J.-B. Salmon, A. Madsen, Dynamics and rheology under continuous shear flow studied by x-ray photon correlation spectroscopy *New Journal of Physics* **12**, 035023 (2010)
- D. Orsi, L. Cristofolini, M.P. Fontana, E. Pontecorvo, C. Caronna, A. Fluerasu, F. Zontone, A. Madsen, Slow dynamics in an azopolymer molecular layer studied by x-ray photon correlation spectroscopy, *Phys. Rev. E* **82**, 031804 (2010)
- K. Laszlo, A. Guillermo, A. Fluerasu, A. Moussaïd, E. Geissler, Microphase Structure of Poly(N-isopropylacrylamide) Hydrogels As Seen by Small- and Wide-Angle X-ray Scattering and Pulsed Field Gradient NMR, *Lamgmuir* **26**, 4415 (2010)

- D. Orsi, L. Cristofolini, M.P. Fontana, E. Pontecorvo, C. Caronna, A. Fluerasu, F. Zontone, A. Madsen, Microscopic dynamics in nanocomposite photosensitive films studied by X-ray photon correlation spectroscopy, *Philosophical Magazine* 1478-6443 (2010)
- S. Busch, T. Jensen, Y. Chushkin, A. Fluerasu, Dynamics in shear flow studied by X-ray Photon Correlation Spectroscopy, *The European Physical Journal E - Soft Matter* **26**, 55 (2008)
- A. Fluerasu, A. Moussaid, P. Falus, H. Gleyzolle, X-ray photon correlation spectroscopy under flow, *Journal of Synchrotron Radiation* **15**, 378 (2008)
- A. Patkowski, J. Gapinski, A. Fluerasu, P. Holmquist, G. Meier, M.P. Lettinga, G. Nägele, Structure and Dynamics of Colloidal Suspensions Studied by means of XPCS, *Acta Physica Polonica A*, **114**, 339 (2008)
- A. Fluerasu, A. Moussaid, A. Madsen, A. Schofield, Slow dynamics and aging in colloidal gels studied by x-ray photon correlation spectroscopy, *Phys. Rev. E* **76**, 010401(R) (2007)
- S. Ravy, D. Le Bolloch, R. Currat, A. Fluerasu, C. Mocuta, B. Dkhil, SrTiO₃ Displacive Transition Revisited via Coherent X-Ray Diffraction, *Phys. Rev. Lett.* **98**, 105501 (2007)
- E. Geissler, K. Kosik, A. Fluerasu, A. Moussaïd, K. László, X-ray Photon Correlation Spectroscopy of Dynamics in Thermosensitive Gels, *Macromolecular Symposia* **256**, 73 (2007)
- W. Tabis, Z. Tarnawski, Z. Kakol, G. Krol, A. Kolodziejczyk, A. Kozłowski, A. Fluerasu, J.M. Honig, *J. Alloys and Compounds* **442**, 203 (2007)
- A.J. Banchio, J. Gapinski, A. Patkowski, W. Häußler, A. Fluerasu, S. Sacanna, P. Holmqvist, G. Meier, M.P. Lettinga, G. Nägele, Many-Body Hydrodynamic Interactions in Charge-Stabilized Suspensions, *Phys. Rev. Lett.* **96**, 138303 (2006)
- A. Papagiannopoulos, T.A. Waigh, A. Fluerasu, C. Fernyhough, A. Madsen, Microrheology of polymeric solutions using x-ray photon correlation spectroscopy, *Journal of Physics: Condensed Matter* **17**, 279 (2005)
- A. Fluerasu, M. Sutton, E.M. Dufresne, X-Ray Intensity Fluctuation Spectroscopy Studies on Phase-Ordering Systems *Phys. Rev. Lett.* **94**, 055501 (2005)
- A. Fluerasu, Coherent X-ray studies on non-equilibrium processes, *Ph.D. Thesis*, McGill University (2004)
- A. Fluerasu, M. Sutton, Kalman-Predictive-Proportional-Integral-Derivative temperature control, *AIP Conf. Proc.* **684**, 933 (2003)

OTHER PUBLICATIONS	A. Fluerasu, L. Wiegart, M. Carlucci-Dayton, Preliminary Design Report for the NSLS-II Coherent Hard X-ray Beamline, BNL 2010	
	K. László, A. Fluerasu, A. Moussaïd, E. Geissler, Jamming Kinetics: PNIPA gels, ESRF Highlights 2010	
	A. Fluerasu, Conceptual Design Report for the NSLS-II Coherent Hard X-ray Beamline, BNL 2009	
	A. Fluerasu, A. Moussaïd, A. Madsen, A. Schoffield, Non-equilibrium dynamics in aging transient gels, ESRF Highlights 2007	
	C. Caronna, Y. Chushkin, A. Fluerasu, C. Ponchut, A. Madsen, Multi-speckle XPCS using a pixelated 2d detector, ESRF Spotlight on Science 2006	
	A. Fluerasu, M. Sutton, Non-equilibrium dynamics during phase-ordering in Cu ₃ Au, APS Highlights 2006	
INVITED PRESENTATIONS	Brookhaven Lecture Brookhaven National Laboratory, NY	Jan. 2013
	Materials Science Colloquium, SUNY Stony Brook Stony Brook, NY	Mar. 2012
	DOE Detector Workshop Gaithersburg, MD	Aug. 2012
	Thermec 2011 Neutron Scattering & X-Ray Studies of Advanced Materials Quebec, Canada	Aug. 2011
	Frontier Science with X-ray Correlation Spectroscopies using Continuous Sources, Science at the Hard X-ray Diffraction Limit Cornell University, Ithaca, NY	Jun. 2011
	Workshop: Dynamics under Extremes, Univ. of Texas, Austin	Jan. 2011
	ESRF/ILL Soft Matter seminar	Apr. 2010
	Physics Department Colloquium, University La Sapienza Roma	Mar. 2008
	Workshop on Xray Photon Correlation Spectroscopy & Microbeam SAXS at NSLS-II	Jan. 2008
	Laboratoire de Spectrometrie Physique Universite Joseph Fourier, Grenoble	Oct. 2007
	Physics Dept. Colloquium, University of Krakow, Poland	Oct. 2007

INVITED

PRESENTATIONS	Colloque Francophone des Cristaux Liquides, Bordeaux	Sept. 2007
CONT.	Advanced Photon Source, Argonne National Laboratory	Jun. 2007
	Experimental Facilities Division, ESRF	May 2007
	LOF (Laboratory Of the Future), Univ. Bordeaux, France	Feb. 2007
	ESRF/ILL Soft Matter seminar	Nov. 2006
	ESRF, Experimental Division Day	May 2005
	ESRF, Soft Condensed Matter Day	Jan. 2005
	Experimental Facilities Division, ESRF, Grenoble	Jul. 2003
	Advanced Photon Source, Argonne National Laboratory	Jun. 2003