Ronald J Pandolfi

CONTACT

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EDUCATION

Ph.D. in Physics — Fall 2009 — Dec 2014

University of California, Merced

Dissertation: Self-assembly and design of tunable soft materials
Specialty: Molecular dynamics simulation, small angle x-ray diffraction
Advisor: Prof. Linda S. Hirst

B.S. in Physics, Mathematics — Fall 2005 — Spring 2009

Randolph-Macon College

WORK EXPERIENCE

Center for Advanced Mathematics for Energy Research Applications, Lawrence Berkeley National Laboratory — Nov 2017 — Present

Project Scientist

- Lead developer of cross-facility collaboration synchrotron data analysis, visualization and management platform, Xi-cam (Available online); in use at 5 energy science laboratories, 7 universities, and 3 industry partners
- Encourage adoption of Xi-cam platform API and integration with Xi-cam as plugins
- Support scientists with data analysis, simulation, and training
- Design application-specific data flow pipelines in Tomography, NEXAFS, and Scattering

Advanced Light Source, Lawrence Berkeley National Laboratory — Feb 2015 — Nov 2017

Postdoctoral Researcher

- Lead developer of cross-facility collaboration synchrotron data reduction and management platform, Xi-cam
- Investigated applications of tender resonant x-ray scattering with experiments at ALS and BESSY-II
- Design and development of an inkjet printing stage for in situ surface scattering experiments
- Assist users with data analysis, simulation and training

University of California, Merced — Summer 2010 — Dec 2014

Graduate Student Researcher

- Investigated semi-flexible filament network formation by molecular dynamics simulation
- Investigated self-assembled liquid crystal quantum dot composite materials by various experimental techniques
- Developed molecular dynamics software tools and models
- Directed 72 hours continuous beamtime experiments in shifts, coordinating optimal use of available time as lead experimenter

- Engineered customized 3D printable beamline automation apparatus

University of California, Merced — Fall 2009 — Dec 2014

Teaching Assistant

- Teaching, grading, and proctoring in both discussion sessions and lab sessions; 4 per week

Stanford Synchrotron Radiation Lightsource, SLAC National Accelerator Laboratory — May 2009 — Aug 2009

Summer Undergraduate Laboratory Internship

- Developed and implemented software tools for crystallographic texture analysis

Thomas Jefferson National Accelerator Facility — May 2009 — Aug 2009

Summer Undergraduate Laboratory Internship

- Conducted statistical analysis of data from measurements on nucleon spin structure at low Q^2 (Jlab E97-110)

Randolph-Macon College, Marketing and Communications Department — Sep 2005 — May 2009

Web Assistant

- Provide assistance to faculty and staff with web development tasks, with emphasis on web programming
- Assist in site administration and development of the school site
- Aided in a successful full site redesign and CMS implementation
- Hours worked per week: 8 Hours

National Science Resources Center - Communications and Media division, — May 2006 — Aug 2006

Intern

- Assisted in web-development and programming
- Helped develop science education materials including additions to the Science and Technology Concepts series and materials for the 2007 Smithsonian Science Education Academies for Teachers

WORKSHOPS & PRESENTATIONS

Workshop Organizer:
Data Reduction and Management with Xi-cam, Workshop, GISAS Summer School, Aug 2018.
CAMERA tomographic reconstruction and analysis capabilities, CAMERA Tomography Workshop 2017, Nov 2017.
Xi-cam and other new software for synchrotron users and collaborators, ALS User Meeting 2017, Oct 2017.
Xi-cam: Platform for Synchrotron Data Reduction, Visualization, and Management, canSAS IX, June 2017.
Data Reduction and Management with Xi-cam, Workshop, GISAS Summer School, Jul 2016.
Hackathon Organizer:
Python-Based Beamline Controls Hackathon, ALS Jul 2018.
Hackathon Participant:
NSLS II Databroker Hackathon, Aug 2018.

NSLS II Data Management Planning Meeting and Hackathon, Feb 2018.
Materials Data Infrastructure Integration Workshop and Hackathon, Dayton OH, Sep 2017.

Invited Talks:

Xi-cam: Flexible High Throughput Data Processing for GISAXS, NOBUGS, Oct 2018.
Xi-cam: Flexible High Throughput Data Processing for GISAXS, GISAS Korea, Sep 2018.
Xi-cam: Addressing the Data Challenge for X-Ray Scattering, ALS User Meeting 2016, Oct 2016.

Other Talks:

Xi-cam: Flexible High Throughput Data Processing for GISAXS, SAS Traverse City, Oct 2018.
CAMERA tomographic reconstruction and analysis capabilities, available within Xi-cam, R. J. Pandolfi, CAMERA Tomography Workshop 2017, Nov 2017.
Xi-cam and other new software for synchrotron users, from the ALS, CAMERA, and collaborators, R. J. Pandolfi (session organizer), ALS User Meeting 2017, Oct 2017.
Xi-cam: Platform for Synchrotron Data Reduction, Visualization, and Management, R. J. Pandolfi, Materials Data Infrastructure Integration Workshop, Dayton OH, Sep 2017.
Xi-cam: Platform for Synchrotron Data Reduction, Visualization, and Management, R. J. Pandolfi, canSAS IX, June 2017.
Xi-cam: Flexible High Throughput Data Processing for GISAXS, R. J. Pandolfi, APS March 2017, New Orleans, March 2017.
Xi-cam: Addressing the Data Challenge for X-Ray Scattering, R. J. Pandolfi, ALS User Meeting 2016, Oct 2016.
Data Reduction and Management with Xi-cam, Workshop, R. J. Pandolfi, D. Kumar, S. Venkatakrishnan, H. Krishnan, A Hexemer, GISAS Summer School, Jul 2016.
Tomography interface design in Xi-cam, R. J. Pandolfi, L. Barosso-Luque, A. Hexemer, ANL Multimodal Data Analysis Hackathon, April 2016.
HipIES: High Performance Integrated Envirnoment for Scattering, Poster, Flash Talk, R. J. Pandolfi, D. Kumar, S. Venkatakrishnan, A. Sarje, A Hexemer, Small Angle Scattering, Sep 2015.
An Analytic Toolbox for Simulated Filament Networks, Poster, R. J. Pandolfi, L. Edwards, L. S. Hirst, Materials Research Society, Apr 2014.
Designing Highly Tunable Semiflexible Filament Networks, Poster, R. J. Pandolfi, L. Edwards, L. S. Hirst, Biophysical Society Meeting, Feb 2014.
Designing Highly Tunable Semiflexible Filament Networks, R. J. Pandolfi, L. Edwards, L. S. Hirst, APS CA-NV Regional Conference, Nov 2013.
Actin Network Molecular Dynamics Simulation with Filamin and α-actinin, Poster, R. J. Pandolfi, L. Edwards, D. Johnston, P. Becich, L. S. Hirst, University of California, Merced, Student Research Poster Competition, April 2012 -- **Nat. Sci. Undergraduate Prize Winner.**
Actin Network Molecular Dynamics Simulation with Filamin and α-actinin, Poster, R. J. Pandolfi, L. Edwards, D. Johnston, P. Becich, L. S. Hirst, Biophysical Society Meeting, February 2012.
Molecular Dynamics Modeling of Actin Network Formation, R. J. Pandolfi, P. Becich, L. Nguyen, and L. S. Hirst, APS March Meeting 2011.
Molecular Dynamics Modeling and Analysis of Actin Network Formation, R. J. Pandolfi, L. S. Hirst, L. T. Nguyen, P. Becich, A. Ahrens, L. Edwards, and D. Johnston, APS CA-NV Regional Conference, Nov 2011.
Molecular Dynamics Simulation of Actin Network Formation, Poster, University of California, Merced, Student Research Poster Competition, April 2011 -- **Nat. Sci. Graduate Prize Winner**.

PUBLICATIONS

"Using resonant soft x-ray scattering to image patterns on undeveloped resists"
Freychet, G. F., Cordova, I. A., McAfee, T., Kumar, D., Pandolfi, R. J., Anderson, C., Naulleau, P., Wang, C., Hexemer, A, J. Micro. Nanoithogr. MEMS MOEMS, in submission.

"Estimation of line cross-sections in etched patterns using critical dimension grazing incidence small angle X-ray scattering"
Freychet, G. F., Kumar, D., Pandolfi, R. J., Naulleau, P., Cordova, I. A., Ercius, P., Song, C., Strzalka, J., Fukuto, M., Hexemer, A., Phys. Rev. B, in submission.

"Convolutional Neural Networks of Grazing Incidence X-ray Scattering Patterns for Mesoscale Crystal Structure Classification"
Liu, S., Melton, C. N., Venkatakrishnan, S., Pandolfi, R. J., Freychet, G., Kumar, D., Tang, H., Hexemer, A., Ushizima, D. M., MDPI, in submission.

"Xi-cam: A versatile interface for data visualization and analysis"
Pandolfi, R. J., et. al. J. Synchrotron Rad., 25, 1261-1270, (2018). (Available online)

"On-the-fly data assessment for high throughput X-ray diffraction measurement"
Ren, F., Pandolfi, R., Van Campen, D., Hexemer, A., and Mehta, A., ACS Comb. Sci. 19, 377–385, (2017). (Available online)

"Self-Assembled nanoparticle micro-shells templated by liquid crystal sorting"
A. Rodarte, B. Cao, H. Panesar, R. J. Pandolfi, M. Quint, L. Edwards, S. Ghosh, J. Hein, L. S. Hirst, Soft Matter, 11, 1701-1707 (2015). (Available online)

"Magnetic field induced brightening in liquid crystal synergized magnetic and semiconducting nanoparticle composite assemblies"
J. Amaral, J. Wan, A. Rodarte, M. Quint, R. J. Pandolfi, M. Scheibner, L.S. Hirst, S. Ghosh, Soft Matter, 11, 255-260 (2015). (Available online)

"An analytic toolbox for simulated filament networks"
R. J. Pandolfi, L. Edwards, L. S. Hirst, Mrss14-1688-y05-18 Spring 2014 MRS proceedings (2014). (Available online)

"Designing highly tunable semi-flexible filament networks"
R. J. Pandolfi, L. Edwards, D. Johnston, P. Becich, and L. S. Hirst, Phys. Rev. E (2014). (Available online)

"Tuning quantum dot organization in liquid crystal for robust photonics applications"
A. L. Rodarte, Z. S. Nuno, B.H. Cao, R. J. Pandolfi, M. Quint, S. Ghosh, J. Hein and L.S. Hirst, CHEM PHYS CHEM, Volume 15, Issue 7, pages 1413–1421, (2014). (Available online)

"Quantum dot/liquid crystal composite materials: Self-assembly driven by liquid crystal phase transition templating"
A. L. Rodarte, R. J. Pandolfi, S. Ghosh, and L. S. Hirst, J. Mater. Chem. C 1, 5527 (2013). (Available online)

PROPOSALS

Berkeley Synchrotron Infrared Structural Biology Imaging Program, collaborator, BER, 2nd term (in review).
Center for Advanced Mathematics for Energy Research Applications, collaborator, BES/ASCR, 2nd term.

SPECIALIZED SKILLS

Proficiency in:

- Python
- C, C++
- REST, Flask design patterns
- Qt
- Matlab
- Mathematica
- VCS (Git), CI (Travis)
- Web languages: HTML, CSS, JavaScript, XML
- SQL, noSQL, SQLAlchemy
- Linux
- LaTeX
- ASP .NET, VB .NET, C# .NET

CERTIFICATIONS

Lawrence Berkeley National Laboratory training (Qualified user at the Advanced Light Source)
高エネルギー加速器研究機構/High Energy Accelerator Research Organization training (Qualified user at the Photon Factory)
Argonne National Laboratory training (Qualified user at the Advanced Photon Source)
Brookhaven National Laboratory training (Qualified user at the National Synchrotron Lightsource II)
Helmholtz-Zentrum Berlin training (Qualified user at Berliner Elektronenspeicherring-Gesellschaft für Synchrotronstrahlung II)
Stanford Linear Accelerator Center training (Qualified user at Stanford Synchrotron Radiation Lightsource)