Samuel A. Briggs

CONTACT INFORMATION

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Samuel-Briggs
S.A.Briggs

QUALIFICATIONS

Nuclear engineering & Engineering Physics Ph.D. candidate with 4+ years of experience in radiation effects in materials for nuclear systems. Excels at utilization of analytical microscopy for advanced materials characterization, collaborating with multidisciplinary research and design teams, and utilizing unique capabilities at scientific user facilities through successful proposal writing. U.S. citizen with established record of being an effective communicator through internationally attended presentations and forthcoming publications in peer-reviewed journals.

EDUCATION

University of Wisconsin - Madison, Madison, WI 2011 to present
Ph.D., Engineering Physics, 2016 (Forthcoming)
- Graduate Advisor: Dr. Todd R. Allen & Dr. Kumar Sridharan

M.S., Engineering Physics, 2013
- Graduate Advisor: Dr. Todd R. Allen & Dr. Kumar Sridharan

Oregon State University, Corvallis, OR 2007 to 2011
B.S., Nuclear Engineering, 2011
- Honors: *Summa cum laude*

RESEARCH EXPERIENCE

Research Assistant 2011 to present
Engineering Physics Department, University of Wisconsin - Madison
Graduate Advisor: Dr. Todd R. Allen & Dr. Kumar Sridharan
Thesis Topic: *Radiation Damage Effects in Reactor-Relevant Alloys Systems*

Highlights:
- Developed theories for dependencies of point defect kinetics relating to segregation and precipitation phenomena affecting long-term operational exposure of Fe-Cr-Al alloys in radiation environments using analytical electron microscopy and atom probe tomography techniques.
- Compared effects of composition and use of different ion species in charged- particle irradiations on microstructure of Ni-Cr model alloys.

PROFESSIONAL EXPERIENCE

Corporate Research Internship 2009 and 2011
Pacific Northwest National Laboratory, Richland, WA.
Supervisor: Dr. Andrew Prichard
Engineering Topics:
- *Design of Passively-Safe Interim Dry Storage Pit for Spent Nuclear Fuel*
- *Reconstruction of Legacy Liquid Metal Fast Reactor Structural Bowing Code for Modern Reactor Design Applications*

Corporate Research Internship 2010
NuScale Power, Corvallis, OR
Supervisor: Maurice LaFountain
Engineering Topics:
- *Preparation of Scoping Calculations and Process Flow Diagrams for Various Primary and Balance-of-Plant Reactor Systems*

Papers in Submission

[1] **S.A. Briggs**, C.M. Barr, J. Pakarinen, M. Mahmivand, K. Hattar, D.D. Morgan, K. Sridharan, M. Taheri. Comparison of microstructure in proton and heavy ion irradiated Ni-Cr binary alloys, Under revision for *Journal of Nuclear Materials*, 2016.

[2] **S.A. Briggs**, J. Pakarinen, D.D. Morgan, K. Sridharan. Combined effects of radiation-enhanced grain boundary migration and solute segregation in Ni-Cr binary alloys. Under revision for *Scripta Materialia*, 2016.

[3] P.D. Edmondson, **S.A. Briggs**, Y. Yamamoto, R.H. Howard, K. Sridharan, K.A. Terrani, K.G. Field. Irradiation-Enhanced α' Precipitation in Model FeCrAl Alloys. Under revision for *Scripta Materialia*, 2016.

Published Reports

[4] K.G. Field, **S.A. Briggs**, P.D. Edmondson, X. Hu, K.C. Littrell, R. Howard, C.M. Parish, Y. Yamamoto. Evaluation of the effect of composition on radiation hardening and embrittlement in model FeCrAl alloys. FY-15 FCRD Milestone Report: *ORNL/TM-2015/518,* September 2015.

Conference Presentations

[5] **S.A. Briggs**, J. Pakarinen, L. Barnard, D.D. Morgan, K. Sridharan, J.D. Tucker, T.R. Allen. *Radiation-induced microstructural effects in nickel-chromium binary alloys.* Presented at the annual TMS meeting and exhibition, Orlando, FL, 2015.

[6] **S.A. Briggs**, J. Pakarinen, L. Barnard, D.D. Morgan, T.R. Allen, K. Sridharan. *Radiation-induced effects in Ni-Cr binary alloys.* Presented at the annual Materials Science & Technology conference, Pittsburgh, PA, 2014.

Scientific Posters

[7] K.G. Field, **S.A. Briggs**, P.D. Edmondson, X. Hu, K.C. Littrell, R. Howard, C.M. Parish, Y. Yamamoto. *Radiation tolerance of Fe-Cr-Al alloys: Role of Al & Cr on phase stability under neutron irradiation.* Poster presented at the 17th International Conference on Fusion Reactor Materials, Eurogress Aachen, Germany, 2015.

[8] **S.A. Briggs**, J. Pakarinen, L. Barnard, D.D. Morgan, I, T.R. Allen, K. Sridharan. *Study of radiation-induced segregation using nickel-chromium binary alloys.* Poster presented at the annual TMS meeting and exhibition, San Diego, CA, 2014.

Current Collaborators (Past 5 years)

Todd R. Allen (UW-Madison/INL), Kumar Sridharan (UW-Madison), Dane Morgan (UW-Madison), Mahmood Mamivand (UW-Madison), Janne Pakarinen (SKC•CEN), Mitra Taheri (Drexel), Christopher Barr (Drexel), James Nathaniel (Drexel), Leland Barnard (Bechtel Corp.), Kevin G. Field (ORNL), Phillip D. Edmondson (ORNL), Kenneth C. Littrel (ORNL), Yukinori Yamamoto (ORNL), Chad M. Parish (ORNL), Xunxiang Hu (ORNL), Richard Howard (ORNL), Julie Tucker (Oregon State).

Hardware and Software Skills

Analytical Microscopy:
- TEM, STEM, EDS, EELS on FEI and JEOL suite of transmission electron microscopes
- SEM, FIB, EDS, EBSD on FEI and JEOL suite of scanning electron microscopes
- APT on CAMECA suite of local electrode atom probes
- Digital Micrograph
- ImageJ
- IVAS

Numerical Analysis:
- MATLAB, Mathematica

Desktop Editing and Productivity Software:
- TEX (LATEX, BIBTEX, Lyx),
- Microsoft Office, OpenOffice.org, OriginPro, Google Docs
- Adobe Creative Suite, GIMP

Operating Systems:
- Microsoft Windows family, Apple OS X, Linux, Unix, Android, Mac iOS

Awards, Honors, and Recognition

- Nuclear Energy University Program Fellow, 2012-2015
- Alpha Nu Sigma Nuclear Engineering Honor Society Inductee, 2010
- Lower Division Nuclear Engineering Student of the Year, 2009
- Oregon State University Presidential Scholarship Award Winner, 2007-2011
- Dean of Engineering Scholarship Recipient, 2007-2010
- National Merit Scholar, 2007
- National Honor Society Inductee, 2006

Professional Memberships

American Nuclear Society (ANS), Member, 2007 - Present

Additional Certifications

Oregon State Board of Examiners for Engineering and Land Surveying (OSBEELS) Engineer in Training, 2011