

Sima Aminorroaya Yamini

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STATEMENT

I am a Materials Scientist with over two decades of leading multidisciplinary projects in Science and Engineering, spanning academia, industry, and entrepreneurship across multiple countries. My research focuses on fabrication and characterisation of inorganic materials, using various techniques including advanced microscopy methods, correlating the microstructure and chemistry of these materials to their physical and mechanical properties. This has allowed me to design and manufacture a wide range of materials and devices for a broad range of applications, extending from metal processing and manufacturing to storage, and conversion of energy. Specifically in the field of thermoelectric materials, my research has focused on unravelling the effect of the chemical and nano-structural inhomogeneity on the electronic transport properties of multiphase compounds. Additionally, I have been developing novel techniques to fabricate stable and reliable contacts between metal electrodes and thermoelectric legs for modules.

Throughout my career, I have secured research funding from various sources and successfully supervised numerous PhD, master and final year undergraduate students to completion. In my recent roles as Subject Group Leader and departmental Research Lead at Sheffield Hallam University in the UK, I have delivered high level operational leadership, and implemented organisations strategic objectives and plans. As a mentor to Early Career Researchers, and lecturers, I have helped to shape the next generation of scientists.

PROFESSIONAL EXPERIENCE

Role: Reader (November 2018 - March 2023) **Sheffield Hallam University, UK**

Role: Senior Lecturer (May 2017 - November 2018)

Departmental Research Lead (June 2021-Feb 2023)

Subject Group Leader (Sep 2022-Feb 2023)

Visiting Scientist (Oct. 2018 – Dec. 2018) **National Institute for Materials Science, Japan**

Role: Senior Research Fellow (Jan 2016 - May 2017) **University of Wollongong, Australia**

Role: Research Fellow (June 2009 - Jan 2016)

Visiting Research Fellow (Jan. 2012 - July 2012) **California Institute of Technology, USA**

Role: Postdoctoral Research Fellow (Aug 2008 – June 2009) **University of Queensland**

Role: Engineer & founder (Sep. 2000 – March 2005)

Naghshe Jahan Steel Research Institute- Isfahan Science and Technology Town

QUALIFICATIONS

Doctor of Philosophy (Materials Science): **University of Wollongong, 2009**

Master of Science (Materials Science and Engineering): **Isfahan University of Technology, 2000**

Bachelor of Science (Materials Science and Engineering): **Isfahan University of Technology, 1998**

Fellow of Higher Education Academy (FHEA)

SELECTED PUBLICATIONS

- S. Aminorroaya*, R Santos, R Fortulan, A.A Gazder, A Malhotra, D Vashae, I Serhienko, T Mori, Room Temperature Thermoelectric Performance of n-type Multiphase Pseudo-Binary $\text{Bi}_2\text{Te}_3 - \text{Bi}_2\text{S}_3$ Compounds: Synergic Effects of Phonon Scattering and Energy Filtering, ACS Applied Materials and Interfaces, Vol. 15, Issue 15, 1922-1929, 2023.
- J. Byrnes, D. Mitchell, S. Aminorroaya*, " Thermoelectric performance of thermally aged nanostructured bulk materials—a case study of lead chalcogenides", Materials Today Physics, 13, 100109, 2020.
- J-B Vaney, S. Aminorroaya*, K. Kobayashi, N Kobayashi, T. Mori*, "Magnetism-mediated thermoelectric performance of the Cr-doped bismuth telluride tetradymite", Materials Today Physics, Vol. 9, 100090, 2019.
- X. R. Ferrerres, S. Aminorroaya*, "Rapid fabrication of diffusion barrier between metal electrode and thermoelectric materials using current-controlled spark plasma sintering technique", Journal of Materials Research and Technology, Vol. 8, No. 1, pp. 8-13, 2019.
- S. Aminorroaya*, D. Mitchell, M. Avdeev, "In-situ characterization of nanostructured multiphase thermoelectric materials at elevated temperatures", Physical Chemistry Chemical Physics, Vol. 18, p. 32814-32819, 2016.
- S Aminorroaya*, T. Li, D. Mitchell, J. Cairney*, "Elemental distribution within multiphase quaternary Pb chalcogenide thermoelectric materials determined using three-dimensional atom probe tomography ", Nano Energy, Vol. 26, p. 157-163, 2016.
- X. R. Ferrerres, S Aminorroaya*, M. Nancarrow, C. Zhang, "One-step bonding of Ni electrode to n-type PbTe: a step toward fabrication of thermoelectric generators", Materials & Design Vol. 107, p. 90-97, 2016.
- S Aminorroaya*, D. Mitchell, Z. Gibbs, R. Santos, V. Patterson, S. Li, Y.Z. Pei, S.X. Dou, G J. Snyder*, "Heterogeneous distribution of sodium for high thermoelectric performance of multiphase lead chalcogenides", Advanced Energy Materials, Vol. 5, Issue 21, 1501047, 2015.
- S. Aminorroaya*, H. Wang, Z. Gibbs, Y.Z Pei, D. Mitchell, S X. Dou, G J Snyder*, "Thermoelectric performance of Tellurium-reduced quaternary p-type lead-chalcogenide composites", Acta Materialia, Vol. 80, p. 365-372, 2014.
- S Aminorroaya*, T. Ikeda, A. Lalonde, Y. Z Pei, S.X. Dou, G Jeffrey Snyder*, "Rational design of p-type thermoelectric PbTe: Temperature dependent Sodium solubility", Journal of Materials Chemistry A, Vol 1, Issue 31, p. 8725-8730, 2013.