

DEAN SMITH

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CURRENT POSITION

Dec. 2019 – Present **Argonne National Laboratory** (Lemont, IL, USA)
Assistant Physicist, [HPCAT](#)

PROFESSIONAL PREPARATION

May 2016 – June 2019 **University of Nevada, Las Vegas** (Las Vegas, NV, USA)
Postdoctoral scholar, [High Pressure Science & Engineering Center](#) Advisor: [Ashkan Salamat](#)

Sep. 2012 – Mar. 2016 **University of Salford** (Manchester, UK)
PhD Physics Advisor: [John E. Proctor](#)

Sep. 2008 – July 2012 **The University of Hull** (Hull, UK)
MPhys Physics with Nanotechnology Advisors: [Tommy S. Horozov](#) & [D. Martin A. Buzza](#)

VISITING POSITIONS

July – Oct. 2019 **University of Hull** (Hull, UK)
Jan. – Feb. 2018 **Deutsches Elektronen-Synchrotron** (Hamburg, Germany)

RESEARCH INTERESTS

High-temperature experiments in the diamond anvil cell Phase transitions
Chemical bonding at extreme conditions Novel optical techniques for the diamond anvil cell

SKILLS & TECHNICAL ACHIEVEMENTS

Diamond anvil cell proficiency; experience with hydrogen, resistive and laser heating, and gas loading.
Synchrotron X-ray experience at Diamond Light Source (UK), ESRF (France) & Advanced Photon Source (USA).
Designed, constructed, and maintained Raman spectrometers at Uni. of Hull, Uni. of Salford and UNLV.
Developed CO₂ laser heating systems at the 16-ID-B and 16-BM-D beamlines of the Advanced Photon Source (USA).

ACADEMIC SERVICE

2020 Chair of 2020 [Gordon Research Seminar on Research at High Pressure](#) (now taking place in 2022).
2016–2019 Co-supervised 12 [PhD, MSc and BSc students](#) within the Salamat group at UNLV.
2018 Co-organised [Shining Light on Matter at Extremes](#) symposium at UNLV with international speakers.
2017 Hosted [Rebel STEM Academy](#) at UNLV involving lab activities for Las Vegas high school students.

PEER-REVIEWED PUBLICATIONS

- 14 **D. Smith**, D. Sneed, N. Dasenbrock-Gammon, E. Snider, G. A. Smith, C. Childs, J. S. Pigott, N. Velisavljevic, C. Park, K. V. Lawler,* R. P. Dias,* & A. Salamat,* Anomalous Conductivity in the Rutile Structure Driven by Local Disorder, [The Journal of Physical Chemistry Letters](#) **10**, 5351 (2019)
- 13 Z. M. Grande, C. Huang, **D. Smith**, J. S. Smith, J. H. Boisvert, O. Tschauner, J. H. Steffen,* & A. Salamat,* Bond strengthening in dense H₂O and implications to planetary composition (under review, [arXiv:1906.11990](#))
 - Featured in [New Scientist](#) (4th July 2019)
- 12 H. E. Weekes, D. Dye,* J. E. Proctor, **D. Smith**, C. Simionescu, T. J. Prior, & M. R. Wenman, The effect of pressure on hydrogen solubility in Zircaloy-4, [Journal of Nuclear Materials](#) **524**, 256 (2019)
- 11 D. Sneed, J. S. C. Kearney, **D. Smith**, J. S. Smith, C. Park, & A. Salamat*, Probing disorder in high-pressure cubic tin (IV) oxide: a combined x-ray diffraction and absorption study, [Journal of Synchrotron Radiation](#) **26**, 1245 (2019)

- 10 D. Durkee, **D. Smith**, R. Torchio, S. Petitgirard, R. Briggs, I. Kantor, S. R. Evans, T. Chatterji, T. Irifune, S. Pascarelli, K. V. Lawler,* A. Salamat,* & S. A. J. Kimber,* Electronic origins of the giant volume collapse in the pyrite mineral MnS₂, *Journal of Solid State Chemistry* **269**, 540 (2019)
- 9 **D. Smith*** D. P. Shelton, P. B. Ellison, & A. Salamat,* Simple imaging for the diamond anvil cell: Applications to hard-to-reach places, *Review of Scientific Instruments* **89**, 103902 (2018)
- 8 **D. Smith*** J. S. Smith,* C. Childs, E. Rod, R. Hrubiak, G. Shen, & A. Salamat,* A CO₂ laser heating system for *in situ* high pressure-temperature experiments at HPCAT, *Review of Scientific Instruments* **89**, 083901 (2018)
- 7 J. S. C. Kearney, M. Grauzinytė, **D. Smith*** D. Sneed, C. Childs, J. Hinton, C. Park, J. S. Smith, E. Kim, S. D. S. Fitch, A. H. Hector, C. J. Pickard, J. A. Flores-Livas,* & A. Salamat,* Pressure tuneable visible-range band gap in the ionic spinel tin nitride, *Angewandte Chemie (Int. Ed.)* **57**, 11623 (2018) and *Angewandte Chemie* **130**, 11797 (2018)
- 6 J. Louis-Jean, S. Mariappan Balasekaran,* **D. Smith**, A. Salamat, C. T. Pham, & F. Poineau, Syntheses, Raman spectroscopy & crystal structures of alkali hexafluoridorhenates(IV) revisited, *Acta Crystallographica E* **74**, 646 (2018)
- 5 **D. Smith**, K. Lawler, M. Martinez-Canales, A. Daykin, Z. Fussell, G. A. Smith, C. Childs, J. S. Smith, C. J. Pickard, & A. Salamat,* Postaragonite phases of CaCO₃ at lower mantle pressures, *Physical Review Materials* **2**, 013605 (2018)
- 4 **D. Smith**, M. A. Hakeem, P. Parisiades, H. E. Maynard-Casely, D. Foster, D. J. Bull, A. R. L. Marshall, A. M. Adawi, R. T. Howie, A. Sapelkin, V. V. Brazhkin, & J. E. Proctor,* Crossover between liquidlike and gaslike behaviour in CH₄ at 400 K, *Physical Review E* **96**, 052113 (2017)
 - Featured in *Physics World* (Volume 31, May 2018)
- 3 **D. Smith**, O. Joris, A. Sankaran, H. Weekes, D. Bull, T. Prior, D. Dye, D. Errandonea, & J. E. Proctor,* On the high-pressure phase stability and elastic properties of β -Ti alloys, *Journal of Physics: Condensed Matter* **29**, 155401 (2017)
- 2 **D. Smith*** R. T. Howie, I. F. Crowe, C. L. Simionescu, C. M. Murny, V. Vishnyakov, K. S. Novoselov, Y.-J. Kim, M. P. Halsall, E. Gregoryanz, & J. E. Proctor,* Hydrogenation of graphene by reaction at high pressure and high temperature, *ACS Nano* **9**, 8279 (2015)
- 1 A. D. Law, M. Auriol, **D. Smith**, T. S. Horozov,* & D. M. A. Buzza,* Self-assembly of two-dimensional colloidal clusters by tuning the hydrophobicity, composition, and packing geometry, *Physical Review Letters* **110**, 138301 (2013)

PEER REVIEW SERVICE

Journal of Applied Physics, Journal of Geophysical Research: Solid Earth, Materials, Review of Scientific Instruments

COMMUNICATIONS

INVITED ORAL PRESENTATIONS

University of Illinois at Chicago	Chicago, IL, USA	Apr. 2020
Gordon Research Seminar: <i>Research at High Pressures</i>	Holderness, NH, USA	July 2018
DESY Photon Sciences User Meeting	Hamburg, Germany	Jan. 2018
University of North Florida	Jacksonville, FL, USA	Sept. 2016
14 th International Symposium on Metal Hydrogen Systems	Salford, UK	July 2014

CONTRIBUTED ORAL PRESENTATIONS

APS March Meeting 2018	Los Angeles, CA, USA	Mar. 2018
AIRAPT-26 (joint with ACHRP-8 & CHPC19)	Beijing, PRC	Aug. 2017
Joint AIRAPT-25 & EHPRG-53	Madrid, Spain	Sept. 2015
IOP Shockwaves & Extreme Conditions Group Meeting: PETER 2014	London, UK	Apr. 2014

SESSION CHAIR

21 st Biennial Meeting of APS GSCCM 2019: <i>Early Career & Student Symposium</i>	Portland, OR, USA	June 2019
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ACADEMIC ORGANISATIONS

International Association for the Advancement of High Pressure Science & Technology	Member
Institute of Physics (UK)	Member
National Postdoctoral Association	Affiliate postdoc