

# CLAIRE WHITE - CV

## DETAILS

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Princeton University  
Princeton, NJ 08544, USA  
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## CURRENT EMPLOYMENT

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**Position** Assistant Professor (2013 – present)  
Department of Civil and Environmental Engineering, and the  
Andlinger Center for Energy & the Environment  
Princeton University

Associated Faculty, Department of Chemical and Biological Engineering  
Associated Faculty, Department of Mechanical and Aerospace  
Engineering  
Associated Faculty, Princeton Institute for the Science and Technology of  
Materials  
Associated Faculty, Princeton Institute for Computational Science and  
Engineering  
Associated Faculty, Princeton Environmental Institute

## AWARDS, SCHOLARSHIPS AND PRIZES

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### **Howard B. Wentz Jr. Junior Faculty Award (Princeton University, 2017)**

- Award recognizes and assists promising junior faculty members in the School of Engineering and Applied Science at Princeton University

Listed on the **Princeton Engineering Commendation List for Outstanding Teaching** in Spring 2016, Fall 2016, Spring 2017 and Fall 2017

### **CAREER Award (National Science Foundation, 2016)**

### **Discovery Early Career Research Award (Australian Research Council)**

- Announced as a recipient of the DECRA grant in November 2012. Receded due to appointment at Princeton University, USA

### **Outstanding Student Research Prize 2012**

- Awarded by the Neutron Scattering Society of America in recognition of outstanding accomplishment in the area of neutron scattering

### **Director's Postdoctoral Fellowship (2011-2013)**

- Los Alamos National Laboratory competitive postdoctoral program

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## Graduate Research Scholarship

- Australian Postgraduate Award to undertake higher research degree studies, 2007 - 2010

## Select Undergraduate Academic Awards (University of Melbourne, 2002 – 2006)

- Dean's Honours List in 2006 (Eng), 2005 (Eng), 2004 (Eng & Sci), 2003 (Eng & Sci), 2002
- Argus Scholarship in Civil Engineering for highest academic performance in final year, 2006
- Fred Green Memorial Prize for highest academic performance, 2005

## PREVIOUS EMPLOYMENT

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<b>Position</b>	Director's Postdoctoral Fellow (2011 – 2013) Lujan Neutron Scattering Center / Physics and Chemistry of Materials, joint position Los Alamos National Laboratory
	Postdoctoral Research Associate (2010 – 2011) Lujan Neutron Scattering Center / Center for Nonlinear Studies, joint position Los Alamos National Laboratory

## EDUCATIONAL BACKGROUND

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<b>2010</b>	Ph.D.	Department of Chemical & Biomolecular Engineering, The University of Melbourne
Title	<i>Atomic structure evolution in amorphous geopolymer precursors and gels</i>	
	Supervisors	Professors Jannie S. J. van Deventer and John L. Provis, Dr Daniel P. Riley
<b>2002 – 2006</b>	B.E. (Civil) (Hons.) B.Sc. (Physics)	The University of Melbourne The University of Melbourne

## PEER REVIEWED JOURNAL PAPERS

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- (49) Dutta R, White CE, Greenberg E, Prakapenka VB, Duffy TS, *Equation of state of the  $\alpha$ -PbO<sub>2</sub> and Pa $\bar{3}$ -type phases of GeO<sub>2</sub>, to 120 GPa*, Phys. Rev. B, accepted
- (48) Nigay P-M, White CE, Nzihou A, Soboyejo WO, *Removal mechanisms of contaminants in ceramic water filters*, J. Environ. Eng., **2018** 144 (12) 04018128
- (47) Nigay P-M, Nzihou A, White CE, Soboyejo WO, *Accumulators for the capture of heavy metals in thermal conversion systems*, J. Environ. Eng., **2018** 144 (12) 04018118
- (46) Peys A, White CE, Olds DP, Rahier H, Blanpain B, Pontikes Y, *Molecular structure of CaO-FeO<sub>x</sub>-SiO<sub>2</sub> glassy slags and resultant inorganic polymer binders*, J. Am. Ceram. Soc., **2018** 101 (12) 5846-5857

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- (45) White CE, Garg N, Olds D, Vocaturo J, Everett SM, Page K, *A uniaxial load frame for in situ neutron studies of stress-induced changes in cementitious materials and related systems*, Rev. Sci. Instrum., **2018** 89 092903  
\*Invited manuscript for special issue.
- (44) Feng J, Zhang Y, McManus S, Ristroph K, Lu H, Gong K, White CE, Prud'homme R, *Rapid recovery of clofazimine-loaded nanoparticles with long-term storage stability as anti-cryptosporidium therapy*, ACS Appl. Nano Mater., **2018** 1 (5) 2184-2194
- (43) Gong K, White CE, *Nanoscale chemical degradation mechanisms of sulfate attack in alkali-activated slag*, J. Phys. Chem. C, **2018** 122 (11) 5992-6004
- (42) Yang K, Özçelik VO, Garg N, Gong K, White CE, *Drying-induced atomic structural rearrangements in sodium-based calcium-alumino-silicate-hydrate gel and the mitigating effects of ZrO<sub>2</sub> nanoparticles*, Phys. Chem. Chem. Phys., **2018** 20 8593-8606
- (41) Özçelik VO, Gong K, White CE, *Highly surface-active Ca(OH)<sub>2</sub> monolayer as a CO<sub>2</sub> capture material*, Nano Lett., **2018** 18 (3) 1786-1793
- (40) Yang S, Qin Y, Chen B, Özçelik VO, White CE, Shen Y, Yang S, Tongay S, *Novel surface molecular functionalization route to enhance environmental stability of tellurium containing 2D layers*, ACS Appl. Mater. Interfaces, **2017** 9 (51) 44625-44631
- (39) Yang S, Cai H, Chen B, Ko C, Özçelik VO, Ogletree DF, White CE, Shen Y, Tongay S, *Environmental stability of 2D anisotropic tellurium containing nanomaterials: anisotropic to isotropic transition*, Nanoscale, **2017** 9 12288-12294
- (38) Nigay P-M, Nzihou A, White CE, Soboyejo WO, *Structure and properties of clay ceramics for thermal energy storage*, J. Am. Ceram. Soc., **2017** 100 4748-4759
- (37) Blyth A, Eiben CA, Scherer GW, White CE, *Impact of activator chemistry on permeability of alkali-activated slags*, J. Am. Ceram. Soc., **2017** 100 4848-4859
- (36) Garg N, White CE, *Mechanism of zinc oxide retardation in alkali-activated materials: an in situ X-ray pair distribution function investigation*, J. Mater. Chem. A, **2017** 5 11794-11804  
Themed issue: Journal of Materials Chemistry A Emerging Investigators 2017
- (35) White CE, Olds DP, Hartl M, Hjelm RP, Page K. *Evolution of the pore structure during the early stages of the alkali-activation reaction: an in situ small-angle neutron scattering investigation*, J. Appl. Cryst. **2017** 50 (1) 61-75
- (34) Gu T, Jeong H, Yang K, Wu F, Yao N, Priestley RD, White CE, Arnold CB, *Anisotropic crystallization in solution processed chalcogenide thin film by linearly polarized laser*, Appl. Phys. Lett., **2017** 110 041904
- (33) Özçelik VO, White CE, *Nanoscale charge-balancing mechanism in alkali-substituted calcium-silicate-hydrate gels*, J. Phys. Chem. Lett., **2016** 7 (24) 5266-5272
- (32) Yang K, White CE, *Modeling the formation of alkali aluminosilicate gels at the mesoscale using coarse-grained Monte Carlo*, Langmuir, **2016** 32 (44) 11580-11590
- (31) Gong K, White CE, *Impact of chemical variability of ground granulated blast-furnace slag on the phase formation in alkali-activated slag*, Cem. Concr. Res., **2016** 89 310-319
- (30) Stan CV, Dutta R, White CE, Prakapenka V, Duffy TS, *High-pressure polymorphism of PbF<sub>2</sub> to 75 GPa*, Phys. Rev. B, **2016** 94 024104

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- (29) Natali ME, White CE, Bignozzi MC, *Elucidating the atomic structures of difference sources of fly ash using X-ray and neutron PDF analysis*, Fuel, **2016** 177 148-156
- (28) White CE, *Effects of temperature on the atomic structure of synthetic calcium-silicate-deuterate gels: A neutron pair distribution function investigation*, Cem. Concr. Res., **2016** 79 93-100
- (27) Morandea AE, Fitts JP, Lee HD, Shubeita SM, Feldman LC, Gustafsson T, White CE, *Nanoscale heterogeneities in a fractured alkali-activated slag binder: A helium ion microscopy analysis*, Cem. Concr. Res., **2016** 79 45-48
- (26) Morandea AE, White CE, *The role of magnesium-stabilized amorphous calcium carbonate in mitigating the extent of carbonation in alkali-activated slag*, Chem. Mater., **2015** 27 (19) 6625-6634
- (25) Morandea AE, White CE, *In situ X-ray pair distribution function analysis of accelerated carbonation of a synthetic calcium-silicate-hydrate gel*, J. Mater. Chem. A, **2015** 3 8597-8605
- (24) White CE, Daemen LL, Hartl M, Page K, *Intrinsic differences in atomic ordering of calcium (alumino)silicate hydrates in conventional and alkali-activated cements*, Cem. Concr. Res., **2015** 67 66-73
- (23) White CE, Henson NJ, Daemen, LL, Hartl M, Page K, *Uncovering the true atomic structure of disordered materials: The structure of a hydrated amorphous magnesium carbonate ( $MgCO_3 \cdot 3D_2O$ )*, Chem. Mater., **2014** 26 (8) 2693-2702
- (22) White CE, Kearley GJ, Provis JL, Riley DP, *Inelastic neutron scattering analysis of the thermal decomposition of kaolinite to metakaolin*, Chem. Phys., **2013** 427 82-86  
\*Special issue: *Advances and frontiers in chemical spectroscopy with neutrons*
- (21) White CE, Kearley GJ, Provis JL, Riley DP, *Structure of kaolinite and influence of stacking faults: Reconciling theory and experiment using inelastic neutron scattering analysis*, J. Chem Phys., **2013** 138 (19) 194501
- (20) White CE, Page K, Henson NJ, Provis JL, *In situ X-ray pair distribution function analysis of geopolymer gel nanostructure formation kinetics*, Phys. Chem. Chem. Phys., **2013** 15 (22) 8573-8582
- (19) White CE, Page K, Henson NJ, Provis JL, *In situ synchrotron X-ray pair distribution function analysis of the early stages of gel formation in metakaolin-based geopolymers*, Appl. Clay Sci., **2013** 73 (SI) 17-25
- (18) Provis JL, Hajimohammadi A, White CE, Bernal SA, Myers RJ, Winarski RP, Rose V, Proffen T, Llobet A, van Deventer JSJ, *Nanostructural characterization of geopolymers by advanced beamline techniques*, Cem. Concr. Compos., **2013** 36 (1) 56-64
- (17) White CE, Provis JL, Proffen T, van Deventer JSJ, *Molecular mechanisms responsible for the structural changes occurring during geopolymerization: Multiscale simulation*, AIChE J. **2012** 58 (7) 2241-2253
- (16) Provis JL, Myers RJ, White CE, Rose V, van Deventer JSJ, *X-ray microtomography shows pore structure and tortuosity in alkali-activated binders*, Cem. Concr. Res., **2012** 42 (6) 855-864

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- (15) White CE, *Pair distribution function analysis of amorphous geopolymer precursors and binders: the importance of complementary simulations*, Z. Kristallogr., **2012** 227 (5) 304-312
- (14) White CE, Provis JL, *Comment on "Structure-directing role of counterions in the initial stage of zeolite synthesis"*, J Phys. Chem. C, **2012** 116 (1) 1619-1621
- (13) White CE, Provis JL, Llobet A, Proffen T, van Deventer JSJ, *Evolution of local structure in geopolymer gels: an in situ neutron pair distribution function analysis*, J Am. Ceram. Soc., **2011** 94 (10) 3532-3539
- (12) Page K, White CE, Estell EG, Neder RB, Llobet A, Proffen T, *Treatment of hydrogen background in bulk and nanocrystalline neutron total scattering experiments*, J Appl. Crystallogr., **2011** 44 532-539
- (11) White CE, Provis JL, Proffen T, van Deventer JSJ, *Quantitative mechanistic modeling of silica solubility and precipitation during the initial stages of zeolite synthesis*, J Phys. Chem. C, **2011** 115 (20) 9879-9888
- (10) White CE, Provis JL, Kearley GJ, Riley DP, van Deventer JSJ, *Density functional modelling of silicate and aluminosilicate dimerisation solution chemistry* Dalton Trans., **2011** 40 (6) 1348-1355
- (9) White CE, Provis JL, Gordon LE, Riley DP, van Deventer JSJ, *Effect of temperature on the local structure of kaolinite intercalated with potassium acetate*, Chem. Mater., **2011**, 23 (2) 188-199
- (8) White CE, Perander LM, Provis JL, van Deventer JSJ, *The use of XANES to clarify issues related to bonding environments in metakaolin: a discussion of the paper S. Sperinck et al., "Dehydroxylation of kaolinite to metakaolin-a molecular dynamics study," J. Mater Chem., 2011, 21, 2118-2125* J Mater. Chem., **2011**, 21 (19) 7007-7010
- (7) Provis JL, White CE, van Deventer JSJ, *Discussion of Y. Zhang et al., "Study of ion cluster reorientation process of geopolymerization reaction using semi-empirical AMI calculations," Cem Concr Res 39(12): 1174-1179; 2009.* Cem. Concr. Res., **2010**, 40 (5) 827-828
- (6) White CE, Provis JL, Proffen T, van Deventer JSJ, *The effects of temperature on the local structure of metakaolin-based geopolymer binder: a neutron pair distribution function investigation*, J Am. Ceram. Soc., **2010**, 93 (10) 3486-3492
- (5) Wurden C, Page K, Llobet A, White CE, Proffen T, *Extracting differential pair distribution functions using MIXSCAT*, J. Appl. Cryst., **2010**, 43, 635-638
- (4) White CE, Provis JL, Proffen T, Riley DP, van Deventer JSJ, *Density functional modeling of the local structure of kaolinite subjected to thermal dehydroxylation*, J. Phys. Chem. A, **2010**, 114 (14) 4988-4996
- (3) White CE, Provis JL, Proffen T, Riley DP, van Deventer JSJ, *Combining density functional theory (DFT) and pair distribution function (PDF) analysis to solve the structure of metastable materials: The case of metakaolin.*, Phys. Chem. Chem. Phys., **2010**, 12 (13) 3239-3245
- (2) White CE, Provis JL, Riley DP, Kearley GJ, van Deventer JSJ, *What is the structure of kaolinite: Reconciling theory and experiment*, J. Phys. Chem. B, **2009**, 113 (19) 6756-6765

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- (1) Provis JL, Gehman JD, White CE, Vlachos DG, *Modeling silica nanoparticle dissolution in TPAOH-TEOS-H<sub>2</sub>O solutions*, J. Phys. Chem. C, **2008**, 112 (38) 14769-14775

### INVITED SEMINARS AND INVITED CONFERENCE PRESENTATIONS

- 2018 Northwestern University, Illinois, USA, 31 October, *Uncovering and optimizing the chemical mechanisms in alkali-activated materials and related engineering systems*  
KU Leuven, Leuven, Belgium, 6 September, *Structure, stability and formation rates of the main binder gels in alkali-activated materials*  
Monash University, Melbourne, Australia, 17 August, *Structure, stability and formation rates of the main binder gels in alkali-activated materials*  
11th Asian-Australasian Conference on Composite Materials, Cairns, Australia, 29 July - 1 August, *Structure, stability and formation rates of the main binder gels in alkali-activated materials*  
University of Illinois Urbana-Champaign, Illinois, USA, 1 May, *Uncovering and optimizing the chemical mechanisms in alkali-activated materials and related engineering systems*  
Department of Geosciences at Princeton University, New Jersey, USA, 24 April, *Optimizing the structure and stability of sustainable cements*,  
Texas A&M University, Texas, USA, 20 March, *Uncovering and optimizing the chemical mechanisms in alkali-activated materials and related engineering systems*  
Tsinghua University, Beijing, China, 22 January, *Designing sustainable cementitious materials for a sustainable future*  
Nanjing Tech University, Nanjing, China, 20 January, *Designing sustainable cementitious materials for a sustainable future*  
Southeast University, Nanjing, China, 20 January, *Designing sustainable cementitious materials for a sustainable future*,  
Hunan University, Changsha, China, 18 January, *Designing sustainable cementitious materials for a sustainable future*  
**Keynote** - International Workshop on Nano-engineered and Multifunctional Concrete, Harbin, China, 15-16 January, *Drying-induced atomic structural rearrangements in alkali-activated materials and the mitigating effects of nanoparticles*
- 2017 Missouri University of Science and Technology, Rolla, Missouri, USA, 7 September, *Uncovering the chemical mechanisms controlling formation, stability and long term degradation of sustainable cements*  
University of Hong Kong, Hong Kong, China, 11 August, *Designing sustainable cementitious materials for a sustainable future*  
Gordon Research Conference: Neutron Scattering, Hong Kong, China, 6-11 August, *Uncovering the atomic structure and mesoscale morphology of amorphous materials by combining multiscale simulations and neutron scattering*

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- City University of Hong Kong, Hong Kong, China, 4 August, *Designing sustainable cementitious materials for a sustainable future*
- University of Minnesota, Minneapolis, Minnesota, USA, 25 April, *Uncovering the chemical mechanisms controlling formation, stability and long term degradation of sustainable cements*
- 253<sup>rd</sup> American Chemical Society National Meeting & Exposition, San Francisco, California, USA, 2-6 April, *Manipulating the layered phases in low-CO<sub>2</sub> cements and related minerals*
- 2016 Princeton American Chemical Society Meeting, Princeton, New Jersey, USA, 17 November, *Nanoengineering low-CO<sub>2</sub> concrete using synchrotron and neutron techniques combined with multiscale simulations*
- Gordon Research Conference: Advanced Materials for Sustainable Infrastructure Development, Hong Kong, China, 31 July – 5 August, *Permeability and nanoscale gel stability of alkali-activated materials*
- École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, 30 June, *Investigating the permeability and carbonation behavior of alkali-activated materials*
- EMPA (Swiss Federal Laboratories for Materials Science and Technology), Dübendorf, Switzerland, 29 June, *Investigating permeability and carbonation behavior of sustainable cements*
- Owens Corning, Chambéry, France, 27 June, *Alkali-activated materials*
- 2015 American Geophysical Union Fall Meeting, San Francisco, California, USA, 14-18 December, *Investigating permeability and carbonation behavior of sustainable cements*
- MIT, Cambridge, USA, 2 November, *Kinetics and thermodynamics of alkali-activated materials and related amorphous carbonate phases using high-energy X-ray and neutron scattering and density functional modeling*
- L'École des Mines d'Albi-Carmaux, Albi, France, 25 August, *Engineering low-CO<sub>2</sub> cements and related materials*
- Keynote - 6<sup>th</sup> Advances in Cement-Based Materials**, Manhattan, Kansas, USA, 20-22 July, *Elucidating the kinetics and thermodynamics of alkali-activated materials using high-energy X-ray and neutron scattering*
- University of Rochester, Rochester, USA, 10 April, *Nanoengineering low-CO<sub>2</sub> concrete using synchrotron and neutron techniques combined with multiscale simulations*
- Worcester Polytechnic Institute, Worcester, USA, 9 April, *Nanoengineering low-CO<sub>2</sub> concrete using synchrotron and neutron techniques combined with multiscale simulations*
- 249<sup>th</sup> ACS National Meeting & Exposition, Denver, Colorado, USA, 22-26 March, *Uncovering the local atomic structure of a hydrated amorphous magnesium carbonate: The computational chemistry and total scattering iterative methodology*

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- 2014 **Keynote** - Goldschmidt 2014, Sacramento, California, USA, 8-13 June, *Exploring amorphous aluminosilicates at the nanoscale*  
American Crystallographic Association Annual Meeting, Albuquerque, New Mexico, USA, 24-28 May, *Exploring the potential energy surface of hydrated-amorphous magnesium carbonate: The computational chemistry and total scattering iterative methodology*  
PRISM seminar at Princeton University, Princeton, USA, 7 May, *Engineering sustainable cements at the (atomic and) mesoscale*
- 2013 UT Knoxville, Tennessee, USA, May, *Nanoengineering of macroscale materials*  
TMS 2013 Annual Meeting and Exhibition, San Antonio, Texas, USA, 3-7 March, *Amorphous materials: Potential avenues for uncovering their atomic structures*
- 2012 **Plenary** - American Conference on Neutron Scattering 2012, Washington, DC, USA, 24-28 June, *Recent progress in elucidating accurate structural representations of disordered complex materials*
- 2011 Bragg Institute, Australian Nuclear Science and Technology Organisation, New South Wales, Australia, August, *Probing the local structural evolution of zeolites and cementitious materials using neutron total scattering and multiscale simulations*  
University of Melbourne, Victoria, Australia, August, *The synergy between total scattering and advanced simulation techniques in understanding complex, disordered and nanostructured materials*  
Spallation Neutron Source, Oak Ridge National Laboratory, Tennessee, USA, July, *The role of molecular research in tailoring geopolymers durability*
- 2010 American Crystallographic Association 2010 Annual Meeting, Chicago, Illinois, USA, 24-29 June, *Coupling total scattering and density functional theory computations to solve the structure of complex disordered aluminosilicates*  
12th International Ceramics Congress of Cimtec 2010, Montecatini Terme, Italy, 6-11 June, *The role of molecular research into the commercialization of geopolymer concrete in Australia*
- 2009 Lujan Neutron Scattering Center, Los Alamos National Laboratory, 23 June, *Towards total structure solutions of disordered layered aluminosilicates*  
University of California, Berkeley, 15 May, *Towards total structure solutions of disordered layered aluminosilicates*  
CNLS Los Alamos National Laboratory, 22 April, *Towards the total structure solution of metakaolin*



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## CONFERENCE PRESENTATIONS (ORAL UNLESS NOTED)

- (1) McCaslin E, White CE, *Pair distribution function computed tomography analysis of the local atomic structure of carbonated alkali-activated slag paste*, MS&T 2018 Annual Meeting and Exhibition, Columbus, Ohio, USA, 14-18 October 2018
- (2) Gong K, Cheng YQ, Daemen LL, White CE, *In situ quasi-elastic neutron scattering study on the water dynamics during formation of sustainable cements*, MS&T 2018 Annual Meeting and Exhibition, Columbus, Ohio, USA, 14-18 October 2018  
\*Diamond Ranking for the 2018 GEM Award Finalists – ACerS Basic Science Division
- (3) Gong K, White CE, *X-ray pair distribution function analysis of the chemically induced degradation in alkali-activated slags*, MS&T 2018 Annual Meeting and Exhibition, Columbus, Ohio, USA, 14-18 October 2018 (Poster)  
\*3<sup>rd</sup> place for the Graduate Student Poster Contest
- (4) Gong K, Cheng YQ, Daemen LL, White CE, *In situ quasi-elastic neutron scattering analysis on the water dynamics during formation of alkali-activated cements*, Gordon Research Conference: Advanced Materials for Sustainable Infrastructural Development, Hong Kong, China, 5-10 August 2018 (Poster)
- (5) Yang K, White CE, *Density functional modeling of the pre-nucleation clusters of calcium-silicate-hydrate and related gels*, 9<sup>th</sup> Advances in Cement-Based Materials, University Park, Pennsylvania, USA, 11-12 June 2018
- (6) Garg N, White CE, *Effect of alkalis on the atomic structure of C-S-H: Insights from X-ray PDF and NMR*, 9<sup>th</sup> Advances in Cement-Based Materials, University Park, Pennsylvania, USA, 11-12 June 2018
- (7) Alventosa K, White CE, *The effects of calcium and activator solution chemistry on alkali-activated metakaolin pastes*, 9<sup>th</sup> Advances in Cement-Based Materials, University Park, Pennsylvania, USA, 11-12 June 2018 (Poster)
- (8) Gong K, White CE, *Chemical degradation mechanisms in alkali-activated slags exposed to sulfate attack*, 9<sup>th</sup> Advances in Cement-Based Materials, University Park, Pennsylvania, USA, 11-12 June 2018 (Poster)  
\*Won a best poster prize
- (9) Gong K, White CE, *In situ quasi-elastic neutron scattering study on the water dynamics during formation of alkali-activated slags*, 9<sup>th</sup> Advances in Cement-Based Materials, University Park, Pennsylvania, USA, 11-12 June 2018
- (10) McCaslin E, White CE, *Pair distribution function computed tomography analysis of the local atomic structure of carbonated alkali-activated slag paste*, 9<sup>th</sup> Advances in Cement-Based Materials, University Park, Pennsylvania, USA, 11-12 June 2018
- (11) Yang K, Özçelik VO, Garg N, Gong K, White CE, *Drying-induced atomic structural rearrangements in alkali-activated materials and the mitigating effects of nanoparticles*, 9<sup>th</sup> Advances in Cement-Based Materials, University Park, Pennsylvania, USA, 11-12 June 2018
- (12) Garg N, White CE, *Retardation in alkali-activated materials via zinc oxide: Mechanism and implications*, Alkali Activated Materials and Geopolymers: Versatile Materials Offering High Performance and Low Emissions, Tomar, Portugal, 27 May – 1 June 2018

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- (13) Özçelik VO, Gong K, White CE, Computational design of defect-engineered  $\text{Ca}(\text{OH})_2$  monolayer for  $\text{CO}_2$  capture, 255<sup>th</sup> American Chemical Society National Meeting & Exposition, New Orleans, Louisiana, USA, 18-22 March 2018
- (14) Özçelik VO, Gong K, White CE, Computational design of defect-engineered  $\text{Ca}(\text{OH})_2$  monolayer for  $\text{CO}_2$  capture, APS March Meeting 2018, Los Angeles, California, USA, 5-9 March 2018
- (15) Garg N, White CE, Impact of nano-sized additives on the atomic structure and reaction kinetics of alkali-activated slag, 37<sup>th</sup> Cement and Concrete Science Conference, London, UK, 11-12 September 2017
- (16) Yang K, White CE, Modeling the formation of sodium and calcium aluminosilicate gels at the mesoscale using coarse-grained Monte Carlo, Gordon Research Conference: Neutron Scattering, Hong Kong, China, 6-11 August 2017 (Poster)
- (17) Gong K, Özçelik VO, White CE, Modeling the local structure of ground granulated blast-furnace slag by combining multiple computational tools, 8<sup>th</sup> Advances in Cement-Based Materials, Atlanta, Georgia, USA, 26-28 June 2017 (Poster)  
\*Won a best poster award
- (18) Gong K, White CE, Mechanisms of sulfate attack in alkali-activated slag, 8<sup>th</sup> Advances in Cement-Based Materials, Atlanta, Georgia, USA, 26-28 June 2017
- (19) McCaslin E, White CE, Characterization of amorphous calcium carbonate and pore solution during accelerated carbonation of alkali-activated slag, 8<sup>th</sup> Advances in Cement-Based Materials, Atlanta, Georgia, USA, 26-28 June 2017
- (20) Gong K, White CE, Modeling the atomic structure of calcium aluminosilicate glasses using an iterative simulation-experiment methodology, 12<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology, including Glass & Optical Materials Division Meeting, Waikoloa, Hawaii, USA, 21-26 May 2017
- (21) Yang K, White CE, Modeling the formation of sodium and calcium aluminosilicate gels at the mesoscale using coarse-grained Monte Carlo, 12<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology, including Glass & Optical Materials Division Meeting, Waikoloa, Hawaii, USA, 21-26 May 2017 (Poster)
- (22) McCaslin E, White CE, Role of magnesium and amorphous calcium carbonate in reducing the extent of carbonation degradation in silicate-activated slag pastes, 12<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology, including Glass & Optical Materials Division Meeting, Waikoloa, Hawaii, USA, 21-26 May 2017
- (23) Garg N, White CE, Impact of alkalis on the atomic structure of calcium aluminosilicate gels: An x-ray pair distribution function investigation, 253<sup>rd</sup> American Chemical Society National Meeting & Exposition, San Francisco, California, USA, 2-6 April 2017
- (24) Yang K, White CE, Modeling the formation of sodium and calcium aluminosilicate gels at the mesoscale using coarse-grained Monte Carlo, 253<sup>rd</sup> American Chemical Society National Meeting & Exposition, San Francisco, California, USA, 2-6 April 2017
- (25) Özçelik VO, White CE, Nanoscale charge balancing mechanism in alkali substituted C-S-H gels from first-principles calculations, 253<sup>rd</sup> American Chemical Society National Meeting & Exposition, San Francisco, California, USA, 2-6 April 2017

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- (26) Özçelik VO, White CE, *Nanoscale charge balancing mechanism in calcium-silicate-hydrate gels: Novel complex disordered materials from first-principles*, APS March Meeting 2017, New Orleans, Louisiana, USA, 13-17 March 2017
- (27) Gong K, Özçelik VO, White CE, *Modeling the local structure of amorphous materials: A density functional theory investigation*, APS March Meeting 2017, New Orleans, Louisiana, USA, 13-17 March 2017 (Poster)
- (28) Dutta R, Stan CV, White CE, Duffy TS, *Theoretical study of the high-pressure isosymmetric phase transition in lead fluoride,  $PbF_2$* , American Geophysical Union Fall Meeting, San Francisco, USA, 12-16 December 2016 (Poster)
- (29) Blyth AC, Özçelik VO, Eiben CA, Scherer GW, White CE, *Permeability and gel stability of alkali-activated materials*, American Concrete Institute Convention, Philadelphia, Pennsylvania, USA, 23-27 October 2016
- (30) Garg N, White CE, *Impact of nanoparticles on the atomic ordering of C-S-H and C-(N)-A-S-H gels: New insights from synchrotron X-rays*, Gordon Research Conference: Advanced Materials for Sustainable Infrastructure Development, Hong Kong, China, 31 July - 5 August 2016 (Poster)
- (31) McCaslin E, White CE, *Development of carbonation resistant low- $CO_2$  cements*, Gordon Research Conference: Advanced Materials for Sustainable Infrastructure Development, Hong Kong, China, 31 July - 5 August 2016 (Poster)
- (32) White CE, Olds DP, Hartl MA, Hjelm RP, Page K, *Quantifying the pore structure evolution in sustainable cements using in situ small-angle neutron scattering analysis*, American Conference on Neutron Scattering, Long Beach, California, USA, 10-14 July 2016
- (33) Garg N, White CE, *Impact of nanoparticles on the atomic ordering of C-S-H and C-(N)-A-S-H gels: New insights from synchrotron X-rays*, 7<sup>th</sup> Advances in Cement-Based Materials, Evanston, Illinois, USA, 10-13 July 2016
- (34) Blyth A, Eiben CA, Scherer GW, White CE, *Impact of curing time and activator chemistry on the intrinsic permeability of alkali-activated pastes*, 6<sup>th</sup> International Conference on Engineering for Waste and Biomass Valorization, Albi, France, 23-26 May 2016
- (35) Yang K, White CE, *Does gel stability play a role in dictating the extent of microcracking in alkali-activated slag paste?*, 6<sup>th</sup> International Conference on Engineering for Waste and Biomass Valorization, Albi, France, 23-26 May 2016 (Poster)
- \*Won a best poster prize
- (36) Gong K, White CE, *Modeling the local structure of ground granulated blast-furnace slags: A density functional theory investigation*, 6<sup>th</sup> International Conference on Engineering for Waste and Biomass Valorization, Albi, France, 23-26 May 2016
- (37) Nigay P-M, White CE, Soboyejo W, Nzihou A, *Effect of organics addition in a clay ceramic for the storage of thermal energy*, 6<sup>th</sup> International Conference on Engineering for Waste and Biomass Valorization, Albi, France, 23-26 May 2016
- (38) Ducouso M, Lyczko N, White CE, Morandau A, Nzihou A, *Local atomic structure of biochars: An X-ray pair distribution function investigation*, 6<sup>th</sup> International Conference on Engineering for Waste and Biomass Valorization, Albi, France, 23-26 May 2016 (Poster)

## CLAIRE WHITE - CV

- (39) Özçelik VO, White CE, *Nanoscale properties and stability simulations of alkali activated cement pastes from first principle calculations*, APS March Meeting 2016, Baltimore, Maryland, USA, 14-18 March 2016 (Poster)
- (40) White CE, *Elucidating the atomic structure of synthetic calcium-silicate-hydrate gels using neutron pair distribution function analysis*, Concrete 2015, Melbourne, Victoria, Australia, 30 August – 2 September 2015
- (41) White CE, *Thermal and chemical stability of calcium-silicate-hydrate gel*, Goldschmidt 2015, Prague, Czech Republic, 16-21 August 2015
- (42) Yang K, White CE, *A mesoscale investigation of the alkali-activation reaction using coarse-grained Monte Carlo simulations*, 6<sup>th</sup> Advances in Cement-Based Materials, Manhattan, Kansas, USA, 20-22 July 2015
- (43) Gong K, White CE, *Impact of the mineralogy and local atomic structure of neat slags on the phase formation in alkali-activated slag pastes*, 6<sup>th</sup> Advances in Cement-Based Materials, Manhattan, Kansas, USA, 20-22 July 2015 (Poster)
- \*Won a best poster prize
- (44) Blyth A, Eiben CA, Scherer GW, White CE, *Impact of curing time and activator chemistry on the intrinsic permeability of alkali-activated pastes*, 6<sup>th</sup> Advances in Cement-Based Materials, Manhattan, Kansas, USA, 20-22 July 2015 (Poster)
- (45) Morandau AE, White CE, *Carbonation of calcium-silicate-hydrate gel: Elucidation of atomic structure mechanisms and reaction kinetics using pair distribution function analysis*, Fifth International Conference on Accelerated Carbonation for Environmental and Material Engineering, New York City, New York, US, 21-24 June 2015
- (46) White CE, Daemen LL, Hartl M, Page K, *Nanoscale ordering in conventional and alternative cementitious materials*, Engineering Mechanics Institute Conference, Stanford, California, USA, 16-19 June 2015
- (47) Morandau A, Fitts JP, Myneni S, White CE, *Controlling microcracking in low embodied energy concrete*, Princeton E-affiliates Partnership Third Annual Meeting, Princeton, New Jersey, USA, 14 November 2014
- (48) Morandau A, Thiéry M, Dangla P, White CE, *Accelerated carbonation modelling of fly as blended cement paste*, RILEM International Symposium on Concrete Modelling, Beijing, China, 12-14 October 2014
- (49) Eiben C, Scherer GW, White CE, *Elucidating the intrinsic permeability of alkali-activated slag cement using the beam-bending method*, 5<sup>th</sup> Advances in Cement-based Materials: Characterization, Processing, Modeling and Sensing, Cookeville, Tennessee, USA, 9-11 July 2014
- (50) White CE, Provis JL, Riley DP, Proffen Th, Perander LM, van Deventer JSJ, *Characterisation and description of the structure of metakaolin by total scattering, density functional theory, and X-ray spectroscopy*, Concrete Repair, Rehabilitation and Retrofitting III - Proceedings of the 3rd International Conference on Concrete Repair, Rehabilitation and Retrofitting, ICCRRR 2012, **2012** 1426-1432 (Cape Town, South Africa, 3-5 September 2012)
- (51) Provis JL, Hajimohammadi A, White CE, Bernal SA, Myers RJ, Winarski RP, Rose V, Proffen T, Llobet A, van Deventer JSJ, *Nanostructural characterization of geopolymers*

## CLAIRE WHITE - CV

- by advanced beamline techniques*, 4<sup>th</sup> International Symposium on Nanotechnology in Construction, Agios Nikolaos, Crete, Greece, 20-22 May 2012
- (52) White CE, Bloomer B, Provis JL, Henson NJ, Page K, *The synergy between total scattering and advanced simulation techniques: Quantifying geopolymer gel evolution*, 4<sup>th</sup> International Symposium on Nanotechnology in Construction, Agios Nikolaos, Crete, Greece, 20-22 May 2012
- (53) White CE, *The PDF-DFT synergy for metastable materials: How to obtain structural representations that are energetically favorable*, American Crystallographic Association meeting 2011, New Orleans, Louisiana, USA, 28 May - 2 June 2011
- (54) White CE, *The role of total scattering and multiscale modeling in the technological development of geopolymer concrete*, American Crystallographic Association meeting 2011, New Orleans, Louisiana, USA, 28 May - 2 June 2011
- (55) White CE, Provis JL, Henson NJ, Page K, Proffen T, van Deventer JSJ, *Multiscale modeling of the structural mechanisms occurring during the formation of geopolymer binders: combining density functional theory and Monte Carlo analysis*, American Crystallographic Association meeting 2011, New Orleans, Louisiana, USA, 28 May - 2 June 2011 (Poster)
- (56) White CE, Provis JL, Proffen T, Riley DP, van Deventer JSJ, *Solving the structure of amorphous aluminosilicates: understanding the chemistry of low-CO<sub>2</sub> geopolymer concrete*, LANSCE User Group Meeting, Santa Fe, New Mexico, USA, Sept 30 - Oct 1 2009 (Poster)
- (57) White CE, Provis JL, Riley DP, Proffen T, van Deventer JSJ, *Towards total structure solutions of disordered layered aluminosilicates*, International Conference on Neutron Scattering 2009, Knoxville, Tennessee, USA, 3-7 May 2009.
- (58) White CE, Provis JL, Riley DP, Proffen T, van Deventer JSJ, *Structure of metakaolin from neutron pair distribution function analysis*, 7th AINSE/ANBUG Neutron Science Symposium 2008, Lucas Heights, NSW, Australia, 8-10 Dec 2008.
- (59) White CE, Provis JL, Riley DP, Proffen T, van Deventer JSJ, *Towards the total structure solution of metakaolin*, Materials Science & Technology Conference 2008, Pittsburgh, Pennsylvania, USA, 4-9 Oct 2008
- (60) Duxson P, Gehman JD, White CE, Provis JL, Separovic F, Gan Z, van Deventer JSJ, *<sup>17</sup>O MQMAS NMR characterization of geopolymers*, Chemeca 2007, Melbourne, Victoria, Australia, 24-26 Sept 2007

### TALKS AT SHORT COURSES, WORKSHOPS AND RELATED EVENTS

White CE, *Alternative cements: Combining modeling and experiments*, invited lecture for the Service-life Prediction of Concrete Doctoral Short Course at Oregon State University, Corvallis, Oregon, USA, 9-14 July 2017

White CE, *CAREER: SusChEM: Controlling carbonation degradation in sustainable cements by stabilizing amorphous calcium carbonate*, speaker at the 2017 NSF Career Development Workshop in Ceramics, Waikoloa, Hawaii, USA, 20-21 May 2017

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White CE, *Designing sustainable cementitious materials for a sustainable future*, presenter at the Andlinger Center for Energy and the Environment Building Opening Celebration and Symposium, Princeton, USA, 20 May 2016

White CE, *Short-range correlations using PDF*, lecturer at the 11<sup>th</sup> LANSCE School on Neutron Scattering, Los Alamos, USA, 18-27 February 2015

White CE, *The role of molecular research in tailoring geopolymer durability*, postdoc talk at the Center for Nonlinear Studies, Los Alamos National Laboratory, New Mexico, USA, April 2011

White CE, Provis JL, Proffen T, Riley DP, van Deventer JSJ, *The PDF-DFT synergy for metastable materials: How to obtain structural representations that are energetically favorable*, invited lecture at *Applications of neutron scattering to materials and earth sciences* workshop, University of California, Berkeley, 11 December 2010.

## PROFESSIONAL MEMBERSHIPS

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- Member of RILEM (member of the Technical Committees “247-DTA” and “238-SCM”)
- Voting member of ASTM International
- Member of the American Ceramic Society
- Member of the American Chemical Society

## TEACHING EXPERIENCE

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- CEE 364/ARC364: *Materials in Civil Engineering*, Spring 2014, 2015, 2016, 2017, 2018
- ENE 506: *Synchrotron and Neutron Techniques for Energy Materials*, Fall 2014, 2015, 2017
- ENE 267/MSE287: *Materials for Energy Technologies and Efficiency*, Fall 2016, 2018