

THEODORE HANEIN

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Department of Materials Science and
Engineering, Mappin Street, The University of
Sheffield, S1 3JD, Sheffield, United Kingdom

EDUCATION

- 2012–2016 **University of Aberdeen** Aberdeen, UK
PhD in Chemical Engineering, School of Engineering,
Supervisors: Dr. Marcus N. Bannerman and Prof. Frederik P. Glasser
Thesis: *Development of a novel Calcium SulfoAluminate cement production process.*
- 2011–2012 **University of Manchester** Manchester, UK
MSc in Refinery Design and Operation (Advanced Process Design)
Dissertation: *Heat exchanger network design for improved heat recovery.*
- 2005–2011 **University of Balamand** Al Kurah, Lebanon
BSc in Chemical Engineering - 81%
Project: *Catalytic oxidation of Carbon Black.*
- 2005–2010 **University of Balamand** Al Kurah, Lebanon
BSc in Chemistry - 75%
Project: *Analysing the efficiency of waste-water treatment plants.*

WORK EXPERIENCE

- 2016–Present **University of Sheffield** Sheffield, UK
Research Associate in Materials Engineering (Post-doc)
Department of Materials Science and Engineering
Supervisors: Dr. Hajime Kinoshita and Prof. John L. Provis
- 2011 **Cimenterie Nationale** Chekka, Lebanon
Process Engineering Trainee
Areas of training: plant safety, quality control, and kiln systems.

TEACHING

- 2018 **University of Sheffield** Sheffield, UK
Lecturing: MAT2600 - Materials for structural engineering
- 2012–2016 **University of Aberdeen** Aberdeen, UK
Tutoring and demonstrating in chemical engineering:
Thermodynamics, Heat & mass transfer, Separation processes, and Mathematics

INDUSTRIAL CONTACTS

Contact	Industry	Year	Connection
Olga Chowaniec	CEMEX	2018	Research project partner
Nestor Quintero Mora	CEMEX	2016–2018	Research project partner
Magnus Nyberg	CEMEX	2016–2018	Research project partner
Edward Cavanagh	Hope Cement Works	2016	Researcher development
Thomas Matschei	LafargeHolcim	2015–2016	Research project partner
Vadym Kuznietsov	IBU-tec	2015–2016	Research project contractor

GRANTS AND AWARDS

- 2018 Researcher Co-Investigator on EPSRC grant (Ref:EP/R025959/1; £300,000)
- 2017 Engineering Research Society DO Fund, University of Sheffield. (£250)
- 2016 Principal's Excellence Fund, University of Aberdeen. (£500)
- 2013–2014 Sarah and John Webber Scholarship, 2 years, University of Aberdeen. (£10,000)

MANAGEMENT AND ADMINISTRATION

- 2017–present Writing of grant and fellowship applications.
- 2017–present Designing undergraduate and postgraduate research projects.
- 2017–present Marking of final exams.
- 2015–present Supervising 1 PhD, 2 postgraduate and 8 undergraduate research projects.
- 2017 Conducting interviews for the recruitment of PhD students.
- 2016–present Coordination of meetings and production of final reports for various research projects.
- 2015 Organizer of the 6th Engineering Postgraduate Research Symposium (Univ. Abdn).
- 2015 Setting of coursework and exam questions for engineering modules.

OTHER PROFESSIONAL ACTIVITIES

- 2018–present Working with the Council for At-Risk Academics; incubating academics and helping them develop research proposals.
- 2018–present Thesis mentoring for doctoral students.
- 2017–present Associate member of the Royal Society of Chemistry.
- 2017–present Qualified first-aider for the workplace.
- 2016–present Reviewer for journals: *Advances in Cement Research & Materials* and *Structures*.
- 2015–2016 Member of the organizing committee of both the 35th and 36th Cement and Concrete Science Conferences.

LIST OF JOURNAL PUBLICATIONS

- 2018 **Hanein, T.**, Galvez-Martos, J.L., and Bannerman, M.N. “Carbon footprint of calcium sulfoaluminate clinker production”, *Journal of Cleaner Production*, **172**, 2278–2287.
- Skalamprinos, S., Galan, I., **Hanein, T.**, and Glasser, F.P. “Enthalpy of formation of ye'elimite and ternesite”, *Journal of Thermal Analysis and Calorimetry*. **131:3**, 2345–2359.
- 2017 **Hanein, T.**, Galan, I., Glasser, F.P., Skalamprinos, S., Elhoweris, A., Imbabi M.S., and Bannerman, M.N. “Stability of ternesite and the production at scale of ternesite-based clinkers”, *Cement and Concrete Research* **98C**, 91–100.
- Hanein, T.**, Glasser, F.P., and Bannerman, M.N. “1D thermal model of rotary kilns used in cement production”, *Advances in Applied Ceramics* **116:4**, 207–215.
- Galan, I., **Hanein, T.**, Elhoweris, A., Bannerman, M.N., and Glasser, F.P. “Phase compatibility in the system CaO-SiO₂-Al₂O₃-SO₃-Fe₂O₃ and the effect of partial pressure on phase stability”, *Industrial & Engineering Chemistry Research* **56:9**, 2341–2349.

Galan, I., Elhoweris, A., **Hanein, T.**, Bannerman, MN., and Glasser, FP. “Advances in clinkering technology of calcium sulfoaluminate cement”, *Advances in Cement Research* **29:10**, 405–417.

Khare, S., Bannerman, MN., Glasser, FP., **Hanein, T.**, and Imbabi MS. “Pilot scale production of novel calcium sulfoaluminate cement clinkers and development of thermal model”, *Chemical Engineering and Processing: Process Intensification* **122**, 68–75.

2016 **Hanein, T.**, Galan, I., Elhoweris, A., Khare, S., Skalamprinos, S., Jen, G., Whittaker, M., Imbabi MS., Glasser, FP., and Bannerman, MN. “Production of belite calcium sulfoaluminate cement using sulfur as a fuel and as a source of clinker sulfur trioxide: Pilot kiln trial”, *Advances in Cement Research* **28:10**, 643–653.

2014 El Hassan, N., Casale, S., Aouad, S., **Hanein, T.**, Jabbour, K., Chidiac, E., el Khoury B., El Zakhem H., and El Nakat, H. “Activity of highly dispersed Co/SBA-15 catalysts (low content) in carbon black oxidation” *Physics Procedia* **55**, 231–236.

LIST OF CONFERENCE PROCEEDINGS

2018 **Hanein, T.**, Provis, J., and Kinoshita, H. “On the sustainable development of cement, Young researcher’s forum IV, Newcastle, UK.

2017 **Hanein, T.**, Provis, J., Nyberg, M., Quintero Mora, NI., Tyrer, M., Maries, A., and Kinoshita, H. “Molten salt synthesis of compounds related to cement”. *In proceedings: 1st International Conference on Cement and Concrete Technology, Muscat, Oman.*

Hanein, T., Galan, I., Skalamprinos, S., Elhoweris, A., Glasser, FP., and Bannerman, MN. “Optimising calcium sulfoaluminate cements”. *In proceedings: 37th Cement and Concrete Science Conference, London, UK.*

Hanein, T., Provis, J., Nyberg, M., Quintero Mora, NI., Tyrer, M., Maries, A., and Kinoshita, H. “Prospects for manufacturing cement compounds in molten salt fluxed systems”. *In proceedings: 37th Cement and Concrete Science Conference, London, UK.*

Bannerman, MN., **Hanein, T.**, and Glasser, FP. “Validation of a one-dimensional kiln heat transfer model against a pilot kiln”. *In proceedings: 37th Cement and Concrete Science Conference, London, UK.*

2016 **Hanein, T.**, Imbabi MS., Glasser, FP., and Bannerman, MN. “Lowering the carbon footprint and energy consumption of cement production: A novel Calcium SulfoAluminate cement production process”. *In proceedings: 1st International Conference on Grand Challenges in Construction Materials, Los Angeles, California, USA.*

2015 **Hanein, T.**, Glasser, FP., and Bannerman, MN. “Thermodynamics of Portland Cement Clinkering”. *In proceedings: 14th International Congress on the Chemistry of Cement, Beijing, China.*

Hanein, T. and Bannerman, MN. “1D thermal model of rotary kilns used in cement production”. *In proceedings: 35th Cement and Concrete Science Conference, Aberdeen, UK.*

Hanein, T., Galan, I., Elhoweris, A., Glasser, FP., and Bannerman, MN. “Thermodynamic data of ye’elimite (C₄A₃S) for cement clinker equilibrium calculations”. *In proceedings: 35th Cement and Concrete Science Conference, Aberdeen, UK.*

PRESENTATIONS

- 2018 On the sustainable development of cement, Young researcher's forum IV, Newcastle, UK.
- 2017 Prospects for manufacturing cement compounds in molten salt fluxed systems, 37th Cement and Concrete Science Conference, London, UK.
Optimising calcium sulfoaluminate cements, 37th Cement and Concrete Science Conference, London, UK.
- 2016 Lowering the Carbon footprint and energy consumption of cement production, University of California, 1st International Conference on Grand Challenges in Construction Materials, Los Angeles, USA.
- 2015 Thermodynamics of Portland Cement Clinkering, 14th International Congress on the Chemistry of Cement, Beijing, China.
1D thermal model of rotary kilns used in cement production, 35th Cement and Concrete Science Conference, Aberdeen, UK.
Thermodynamic data of ye'elemite (C_4A_3S) for cement clinker equilibrium calculations, 35th Cement and Concrete Science Conference, Aberdeen, UK.
High temperature thermodynamic prediction of cement phases, 6th Engineering Post-graduate Research Symposium, Aberdeen, UK.

SKILLS

Programming: Highly proficient in Python.

Laboratory: Operator of Gunt-Hamburg, CE600 (continuous distillation) rig. Muffle and atmospheric furnaces, X-ray diffraction (XRD), differential scanning calorimetry (DSC), scanning electron microscopy with energy-dispersive X-ray spectroscopy (SEM-EDX), pycnometry, surface area analysis (BET), X-ray fluorescence (XRF), laser diffraction for particle size analysis, and thermogravimetric analysis (TGA).

Simulation: Computational thermodynamics and heat transfer.

Software: Publishing: \LaTeX , Beamer, MS/Open Office.
Data analysis: GSAS (General Structure Analysis System) for Rietveld refinement.
Graphing/Math: Python.

Languages: Fluent in English and basic communication skills in Arabic.