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QUALIFICATIONS AND EMPLOYMENT RECORD

June 2015 – present: Dean, Faculty of Engineering and the Built Environment, University of Cape Town
Jan 2013 – May 2015: Head of Department, Chemical Engineering Department, UCT
2010 – 2014: University Orator, “*to prepare and deliver citations for the conferment of honorary degrees or any citations at the invitation of the Vice-Chancellor*”, UCT
Jan 2007 – present: Professor, Chemical Engineering Department, UCT
Jan 2002 – Dec 2006: Associate Professor, Chemical Engineering Department, UCT
Jul 1995 – Dec 2001: Senior Lecturer, Chemical Engineering Department, UCT
Jan 1994 - Jul 1995: Post-Doc Fellow, Water Research Group, Civil Engineering Department (UCT)
1990-1993: PhD Civil Engineering (UCT)
1988-1989: Process Engineer, South African Nylon Spinners
1986-1987: MSc Chemical Engineering (UCT)
1981-1985: BSc Chemical Engineering (UCT)

STUDY AND RESEARCH APPOINTMENTS

1-31 Dec 2016: Visiting Professor, Group for Molecular Engineering of Functional Materials (GMF), Institute of Chemical Science and Engineering, Swiss Federal Institute of Technology (EPFL), Sion, Valais, Switzerland
Jan – May 2009: Visiting Professor, University of Mauritius
Jan – Dec 2003: Visiting Research Associate, Department of Chemical and Process Engineering, Sheffield University, United Kingdom

PROFESSIONAL/EXTENSION

Fellow of the Institute of Chemical Engineers (FIChemE) (2014)
Fellow of the South African Institute of Chemical Engineers (FSAIChE) (2012)
Fellow of the South African Academy of Engineering (FSAAE) (2011)
Member of the American Chemical Society (MACS) (2010)
Fellow of the Southern African Institute of Mining and Metallurgy (FSAIMM) (2013)
Registered as a Professional Engineer by the Engineering Council of South Africa (ECSA), April 1990

AWARDS/HONOURS

2016

- **Africa Water Leadership Award:** conferred on "outstanding professionals who have the vision, flair, acumen and professionalism to demonstrate excellent Leadership and Management skills in an organisation, making changes and achieving results".
- Department of Science and Technology's Women in Science **Distinguished Woman Scientist Award** for Research and Innovation
- Renewal of B2 Rating, National Research Foundation (B2 = Researchers who enjoy considerable international recognition by their peers for the high quality and impact of their recent research outputs)

2015

- **WRC Knowledge Tree Award** for research excellence in the category of New Products and Services for Economic Development.
- Second most cited article in *Hydrometallurgy*: Lewis, A.E. 2010. A review of metal sulphide precipitation, *Hydrometallurgy*, 104 (2) 222-234

2014

- **University Orator** appointment extended for a second five-year term (resigned in June 2015 on being appointed as Dean)

2012

- Elected a **Fellow** of the University of Cape Town College of Fellows

- Ministry of Science and Technology SA award, winner of the '**Distinguished Woman in Physical and Engineering Science**', for an outstanding contribution to building South Africa's scientific and research knowledge base
- **NSTF Awards, finalist** for "an outstanding team contribution to SETI through research leading to innovation", for the Crystallization and Precipitation Research Unit and its Eutectic Freeze Crystallization project

2011

- **Best paper award**, Chemical Technology, Randall, D.G., Nathoo, J. and Lewis, A.E. A case study for treating a reverse osmosis brine using Eutectic Freeze Crystallization - approaching a zero waste process, Desalination, August, 266, (1-3) 256-262
- **Best poster award**, 18th International Symposium on Industrial Crystallization (ISIC18), Beck, R., Mohamed, R., Lewis, A.E. and Andreassen, J-P., 2011. Growth and morphology of the vaterite polymorph of calcium carbonate at constant supersaturation", Zurich, Switzerland, September, pp 218-219

2010

- 2010: **NRF President's Champion of Research Capacity Development at South African Higher Education Institutions Award**, [http://www.academia.edu/365184/2010_NRF_Top_Achievers - Mainstays of Research](http://www.academia.edu/365184/2010_NRF_Top_Achievers_-_Mainstays_of_Research)
- '**Highly Commended**' Certificate, **British IChemE Sustainable Technology Award**, for the project "Eutectic Freeze Crystallization for treatment of hypersaline brines"
- **Member of the Academy of Science of South Africa (ASSAF)**
- Appointed as **University Orator** "to prepare and deliver citations for the conferment of honorary degrees or any citations at the invitation of the Vice-Chancellor."

2009

- **B2 Rating, National Research Foundation** (B2 = Researchers who enjoy considerable international recognition by their peers for the high quality and impact of their recent research outputs)
- **Finalist, DTI Technology awards**, for the project "treatment and purification of brines and acid mine drainage" in the award category: Research Collaboration
- **Best paper award**, Australasian Institute of Mining and Metallurgy's Water in Mining Conference, Perth, "Worth its salt – how Eutectic Freeze Crystallization can be used to recover water and salt from hypersaline mine waters"

2004, 2005 and 2006

- **Finalist for Research Capacity Development, NSTF Awards**

2003

- OLI Systems Ltd, recipient of the crystallisation research grant for United States Department of Energy (DOE) crystallisation project, Rated as
 - "Internationally leading" in research quality, research planning and practice, potential scientific impact and
 - "Outstanding" for output of research staff, communication of research outputs, potential benefits to society and cost-effectiveness by external reviewers for the personal contribution to the US DOE project on crystallisation
- **Research Fellowship**, United Kingdom Engineering and Physical Sciences Research Council (EPSRC)

1999, 2000 and 2001

- **UCT's Distinguished Teacher's Award, shortlisted**

1998, 1999 and 2000

- **UCT Merit Award**

KEYNOTE ADDRESSES/PLENARY LECTURES/ INVITED CONTRIBUTIONS

1. Lewis, A.E., 2017. **Crystallization and precipitation in extractive metallurgy**. COM 2017: Conference Of Metallurgists, 27 – 30 August 2017, Hyatt Regency Vancouver, Vancouver, BC, Canada
2. Lewis, A.E., 2017. **Eutectic Freeze Crystallization**. Water Institute of Southern Africa: Advanced Technical Workshop on Water Treatment, Aurecon, 10 March.
3. Lewis, A.E., 2015. "**Rethinking Precipitation Processes: The Art of the State**", "Distinguished Lecturer Series: Lectures at the Leading Edge, University of Toronto, February 2015,

<http://www.chem->

[eng.utoronto.ca/news/Lectures_at_the_Leading_Edge_Emerging_Leaders_Lecture_Series.htm](http://www.chem-eng.utoronto.ca/news/Lectures_at_the_Leading_Edge_Emerging_Leaders_Lecture_Series.htm)

- Lewis, A.E., 2014. **Turning toxins into treasure, recovery of metals from wastewater using crystallization**, IMETE – International Master of Science in Environmental Technology and Engineering, Ghent University, Belgium, 8-12 September 2014, <http://www.imetesummer.ugent.be/programme.htm>
- Lewis, A.E., 2014. **Is it art? Or is it science? From Alchemy to Hydrometallurgy: Industrial Crystallization Research at the University of Cape Town**, Max Planck Institute of Complex Technical Systems, Magdeburg, Germany, 21-23 May 2014, http://www.mpi-magdeburg.mpg.de/2337249/past_colloquia
- Lewis, A.E., 2014. **Making value out of waste: why Eutectic Freeze Crystallization is a hot topic right now**, ACQUEAU – *Water Beyond*; Europe Workshop, Brussels, Belgium, 20-21 February, 2014, http://www.eurekanetwork.org/showevent?p_r_p_564233524_articleId=3559136&p_r_p_564233524_groupId=10137
- Lewis, A.E., 2014. **Rethinking water and waste - The State of the Art of Eutectic Freeze Crystallisation**. 11th International Water Association (IWA) Leading-Edge Technology conference, Abu Dhabi, United Arab Emirates, 26-30 May 2014, **Keynote address**
- Lewis, A.E., 2012. **Mining applications in crystallization**, Series of lectures in postgraduate course on crystallization, *Lappeenranta University of Technology*, Finland, November 2012
- Lewis, A.E., Randall, D.G., Reddy, S.T., Jivanji, R. and Nathoo, J., 2009. **Worth its salt – how Eutectic Freeze Crystallization can be used to recover salt from hypersaline mine waters**, *Water in Mining*, AusIMM, Perth Australia, September, 2009, **Keynote address**, <https://www.ausimm.com.au/publications/publication.aspx?ID=5387>

DEANSHIP ACTIVITIES

- Andrews, P. and Lewis, A.E., 2017. **Transformation and Decolonisation at the University of Cape Town and Why its Urgency? Perspectives from the EBE and Law Faculties**. Alumni presentation: New York City, 13 April.
- Andrews, P. and Lewis, A.E., 2016. Institutional Panel: **Key Challenges and opportunities at UCT in the context of higher education change**. New Academic Practitioners Programme, Residential workshop: Mont Fleur Conference Centre, 8-10 June.
- Lewis, A.E., 2015. **“Curriculum development and design for student success and transformation in the Faculty of Engineering and the Built Environment at the University of Cape Town”** GEDC/AEDC SUMMIT on Education, Addis Ababa, Ethiopia, September 17 – 18, 2015
- July 2015: Appointed to the Minister’s to Selection Panel for South African Water Boards, Trans Caledon Tunnel Authority Board and Water Research Commission Board.

PUBLICATIONS

Articles in international, accredited, peer -reviewed journals

- Jooste, D. Chivavava, J., and Lewis, A.E. 2017. **Towards zero liquid discharge: Investigations into ice scaling during eutectic freeze crystallization of brine streams**, *Desalination*, (submitted)
- Maharaj, C., Chivavava, J., and Lewis, A.E. 2017. **Treatment of a highly-concentrated multicomponent mining effluent using calcium hydroxide in a fluidized bed crystallizer**, *Journal of Environmental Management*, (accepted) (Impact factor 2.197)
- Lewis, A.E., Zhang, Y., Gao, P., and Nazeeruddin, M.K., 2017. **Unveil the Grain Growth of Perovskite Films from One-Step and Two-Step Deposition Methods: Implications for Photovoltaic Application**, *ACS Applied Materials & Interfaces*, (accepted) (Impact factor 7.504)
- Hasan, M., Filimonov, R., Chivavava, J., Sorvari, J., Louhi-Kultanen, M. and Lewis, A.E. 2017. **Ice growth on cooling surface of a jacketed and stirred Eutectic Freeze Crystallizer from aqueous Na₂SO₄ solution**, *Separation and Purification Technology*, **175**: 512-526.
- Peters E., Chivavava, J., Rodriguez Pascual M. and Lewis A. 2016. **Effect of a phosphonate antiscalant during Eutectic Freeze Crystallization of a sodium sulphate waste stream**, *Industrial and Engineering Chemistry Research*, **55** (35), 9378-9386

6. Gqebe, S., Rodriguez Pascual, M, Lewis, A.E., 2016. **Modification of the zeta potential of copper sulphide by the application of a magnetic field in order to improve particle settling**, JSAIMM 116 (6) 575-580
7. Hendricks, U., Rodriguez Pascual, M., Banfield, J., and Lewis, A.E., 2015. **Measuring precipitation kinetics of sparingly soluble salts using shock-freeze TEM**, Journal of Crystal Growth 432, 108-115.
8. Egan, T., Rodriguez Pascual, M. and Lewis, A.E., 2014. **In situ growth measurements of sodium sulphate during cooling crystallization**, Chemical Engineering and Technology, 37 (8), 1283-1290
9. Chivavava, J, Rodriguez Pascual and Lewis, A.E. M., 2014. **Effect of operating conditions on ice quality in continuous Eutectic Freeze Crystallization**, Chemical Engineering and Technology, 37 (8), 1314-1320
10. Randall, D.G., Zinn, C and Lewis, A.E., 2014. **Treatment of textile wastewaters using Eutectic Freeze Crystallisation**, Water Science and Technology, 70 (4), 736–741
11. Nduna, M., Lewis, A.E. and Nortier, P., 2014. **A model for the zeta potential of copper sulphide**. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 441, 643–652
12. Kapembwa, M., Rodriguez Pascual, M. and Lewis, A.E., 2014. **Heat and mass transfer effects of ice growth mechanisms in pure water and aqueous solutions**, Crystal Growth and Design, 14, 389-395
13. Apsey, G. and Lewis, A.E., 2013. **Selenium impurity in sodium sulphate decahydrate formed by Eutectic Freeze Crystallization of industrial waste brine**, Journal of the South African Institute of Mining and Metallurgy (JSAIMM) Special Edition, 113, 415-421
14. Nduna, M., Rodriguez Pascual, M. and Lewis, A.E., 2013. **Effect of dissolved precipitating ions on the settling characteristics of copper sulphide**, Journal of the South African Institute of Mining and Metallurgy (JSAIMM) Special Edition, 113, 435-439
15. Randall, D.G., Mohamed, R., Nathoo, J., Rossenrode, H. and Lewis, A.E., 2013. **Improved calcium sulphate recovery from a reverse osmosis retentate using Eutectic Freeze crystallization**, Water Science and Technology, 67, 1, 139-146
16. Randall, D.G., Nathoo, J., Genceli-Guner, F.E., Kramer, H., Witkamp, G. and Lewis. A.E., 2012. **Determination of the metastable ice zone for a sodium sulphate system**. Chemical Engineering Science, 77, 184-188
17. Mokone, T.P., van Hille, R.P. and Lewis, A.E., 2012. **Effect of post-precipitation conditions on surface properties of colloidal metal sulphide precipitates**, Hydrometallurgy, 119–120, May, 55-66
18. Mokone, T.P., Lewis, A.E. and van Hille, R.P., 2012. **Metal sulphides from waste-water: Assessing the impact of supersaturation control strategies**, Water Research, 46, 7, May, 2088-2100
19. Bhikha, H., Lewis, A.E. and Deglon, D.A., 2011. **Reducing water consumption at Skorpion Zinc**, Journal of the South African Institute of Mining and Metallurgy (JSAIMM), 111, June, 437-442
20. Nortier, P., Chagnon, P. and Lewis, A.E., 2011. **Modelling the solubility in Bayer liquors: a critical review and new models**, Chemical Engineering Science, 66, 12, 2596-2605
21. Lewis, A.E. and Mangere, M., 2011. **Reactive crystallization of copper selenide at very high supersaturation: a challenge to classical crystallization theory for sparingly soluble salts**, Chemical Engineering and Technology, 34, 4, 517-524
22. Randall, D.G., Nathoo, J. and Lewis, A.E., 2011. **A case study for treating a reverse osmosis brine using Eutectic Freeze Crystallization - approaching a zero waste process**, Desalination, 266, 1-3, 256-262
23. Mangere, M., Nathoo, J. and Lewis, A.E., 2010. **Nucleation kinetics of selenium (+4) precipitation from acidic copper sulphate solution**, Journal of Crystal Growth, 312, 21, 3178-3182
24. Lewis, A.E., 2010. **A review of metal sulphide precipitation**, Hydrometallurgy, 104, February, 222-234
25. Mokone, TP., van Hille, R.P. and Lewis, A.E., 2010. **Effect of solution chemistry on particle characteristics during metal sulphide precipitation**, Journal of Colloid and Interface Science, 351, 1, 10-18

26. Lewis, A.E., Khodabocus, F., Dhokun, V. and Khalife, M., 2010. **Thermodynamic simulation and evaluation of sugar refinery evaporators using a steady state modelling approach**, Applied Thermal Engineering, 30, 14-15, 2180-2186
27. Reddy, S.T., Lewis, A.E., Witkamp, G.J., Kramer, H.J.M. and van Spronsen, J., 2010. **Recovery of $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$ from a reverse osmosis retentate by Eutectic Freeze Crystallization technology**, Chemical Engineering Research and Design, 88, 9, 1153-1157
28. Andreassen, J.P., Flaten, E.M., Beck, R. and Lewis, A.E., 2010. **Investigations of spherulitic growth in industrial crystallization**, Chemical Engineering Research and Design, 88, 9, 1163-1168
29. Lewis, A.E., Nathoo, J., Thomsen, K., Kramer, H.J., Witkamp, G.J., Reddy, S.T. and Randall, D.G., 2010. **Design of a Eutectic Freeze Crystallization process for multicomponent waste water stream**, Chemical Engineering Research and Design, 88, 9, 1290-1296
30. Hove, M., van Hille, R. and Lewis, A.E., 2009. **The effect of different types of seeds on the oxidation and precipitation of iron**, Hydrometallurgy, 97, March, 180-184
31. Ntuli, F. and Lewis, A. E., 2009. **Kinetic modelling of nickel powder precipitation by high-pressure hydrogen reduction**, Chemical Engineering Science, 64, 9, 2202-2215
32. McGeorge, B., Gaylard, P. and Lewis, A.E., 2009. **Mechanism of rhodium (III) co-precipitation with copper sulphide (at low Rh concentrations) incorporating a new cationic substitution reaction path**, Hydrometallurgy, 96, March, 235-245
33. Hove, M., van Hille, R. and Lewis, A.E., 2008. **Mechanisms of formation of iron precipitates from ferrous solutions at high and low pH**, Chemical Engineering Science, 63, 6, 1626-1635
34. Karbanee, N., van Hille, R. and Lewis, A.E., 2008. **Controlled nickel sulphide precipitation using gaseous hydrogen sulphide**, Industrial and Engineering Chemistry Research, 5, 47, 1596-1602
35. Hove, M., van Hille, R.P. and Lewis, A.E., 2007. **Iron solids formed from oxidation precipitation of ferrous sulphate solutions**, AIChEJ, 53, 10, 2569-2577
36. Chiang, Y-L., Nathoo, J. and Lewis, A.E., 2007. **Investigating the control of manganese sulphide precipitation**, Journal of the South African Institute of Mining and Metallurgy (JSAIMM), 107, April 2-12
37. Ntuli, F. and Lewis, A.E., 2007. **The influence of iron on the precipitation behaviour of nickel powder**, Chemical Engineering Science, 62, 14, 3756-3766
38. Lewis, A.E., 2006. **Fines formation (and prevention) in seeded precipitation processes**, Kona, 24, 2006, 119-125 (Invited contribution)
39. Ntuli, F. and Lewis, A.E., 2006. **The effect of a morphology modifier on the precipitation behaviour of nickel powder**, Chemical Engineering Science, 61, 17, 5827-5833
40. Zhang, Y. and Lewis, A.E., 2006. **Effect of crystallization on the reaction kinetics of nickel reduction by hydrogen**, Chemical Engineering Science, 61, 12, 4120-4125
41. Lewis, A.E. and van Hille, R.P., 2006. **An exploration into the sulphide precipitation method and its effect on metal removal**, Hydrometallurgy, 81, April, 197-204
42. Ochieng, A. and Lewis, A.E., 2006. **CFD simulation of nickel solids off-bottom suspension and cloud height**, Hydrometallurgy, 82, February, 1-12
43. Taty-Costodes, V.C. and Lewis, A.E., 2006. **Reactive crystallization of nickel hydroxy-carbonate in a fluidised bed reactor: Fines production and column design**, Chemical Engineering Science, 61, 5, 1377 – 1385
44. Lewis, A.E. and Swartbooi, A., 2006. **Factors affecting metal removal in mixed sulphide precipitation**, Chemical Engineering and Technology, 29, 2, 277-280
45. Ochieng, A. and Lewis, A.E., 2006. **Nickel solids concentration distribution in a stirred tank**, Minerals Engineering, 19, 2, 180-189
46. Taty-Costodes, V.C., Mause, C.F., Molala, K. and Lewis, A.E., 2006. **A simple approach for determining particle size enlargement mechanisms in nickel reduction**, International Journal of Mineral Processing, 78, 2, 93-100
47. Hounslow, M.J.H., Lewis, A.E., Sanders, S.J. and Bondy, R., 2005. **Generic crystallizer model: I. Framework for a well-mixed compartment**, AIChE J, 51, 11, 2942-2955

48. Lacour, S., van Hille, R., Petersen, K. and Lewis, A.E., 2005. **Comparison of simulators for process and aqueous chemistry modelling**, *AIChE J*, 51, 8, 2358–2368
49. van Hille, R.P., Petersen, K. and Lewis, A.E., 2005. **Copper sulphide precipitation in a fluidised bed reactor**, *Chemical Engineering Science*, 60, 2571-2578
50. Pillay, V., Gärtner, R.S., Himawan, C., Seckler, M.M., Lewis, A.E. and Witkamp, G.J., 2005. **MgSO₄ + H₂O at eutectic conditions and thermodynamic solubility products of MgSO₄·12H₂O(s) and MgSO₄·7H₂O(s)**. *Journal of Chemical and Engineering Data*, 50, 2, 551–555
51. Seewoo, S., van Hille, R. and Lewis, A.E., 2004. **Heavy metal precipitation in scaling waters**, *Hydrometallurgy*, 75, November, 135-146
52. Roberts, M. and Lewis, A.E., 2003. **Three phase mixing studies for nickel precipitation**, *Minerals Engineering*, 16, 9, 881-883
53. Lewis, A.E. and Roberts, M., 2003. **Using fractal structure and flow properties to describe morphology of nickel crystals**, *Journal of the Minerals, Metals and Materials Society (JOM)*, 55, February, 59-61
54. Guillard, D. and Lewis, A.E., 2002. **Optimisation of nickel hydroxycarbonate precipitation using a laboratory pellet reactor**, *Industrial and Engineering Chemistry Research*, 13, 41, 3110–3114
55. Knobel, A.K. and Lewis, A.E., 2001. **A mathematical model of a high sulphate wastewater anaerobic treatment system**, *Water Research*, 36, 257-265
56. Butler, B., Centurier-Harris, J.P. and Lewis, A.E., 2001. **Technical Note: Improving platinum precipitation processes**, *Minerals Engineering*, 14, 8, 905–909
57. Case, J., Gunstone, R. and Lewis, A.E., 2001. **Students' metacognitive development in an innovative second year engineering course**, *Research in Science Education*, 31, 3, 331-355
58. Lewis, A.E. and Beautelement, C., 2001. **Prioritising objectives for waste reprocessing: A case study in secondary lead refining**, *Waste Management*, 22, 677-685
59. Guillard, D. and Lewis, A.E., 2001. **Nickel Carbonate precipitation in a fluidised bed reactor**, *Industrial and Engineering Chemistry Research*, 23, 40, 5564-5569
60. Lewis, A.E. and Roberts, M., 2001. **Quantifying morphology of nickel crystals**, *Journal of the South African Institute of Mining and Metallurgy (JSAIMM)*, 8, 101, 421-426
61. Lewis, A.E. and Hugo, A., 2000. **Characterisation and batch testing of a secondary lead slag**, *Journal of the South African Institute of Mining and Metallurgy (JSAIMM)*, 10, 365-370
62. Cohen, B., Lewis, A.E., Petersen, J., von Blottnitz, H., Drews S.C. and Mahote, S.I., 1999. **The TCLP and its applicability for the characterisation of worst case leaching of wastes from mining and metallurgical operations**, *Advances in Environmental Research*, 3 U5-165
63. Ozinsky A.E. and Ekama G.A., 1995. **Secondary settling tank modelling and design: (1) Review of theoretical and practical developments**, *Water S.A.*, 21, 4, 325-332
64. Ozinsky A.E. and Ekama G.A., 1995. **Secondary settling tank modelling and design: (2) Linking of sludge settleability measures**, *Water S.A.*, 21, 4, 333-350
65. Billing, A.E. and Dold, P.L., 1988. **Modelling techniques for biological reaction systems: (1) Mathematical description and model representation**, *Water S.A.*, 14, 4, 185-192
66. Billing, A.E. and Dold, P.L., 1988. **Modelling techniques for biological reaction systems: (2) Modelling of the steady state case**, *Water S.A.*, 14, 4, 193-206
67. Billing, A.E. and Dold, P.L., 1988. **Modelling techniques for biological reaction systems: (3) Modelling of the dynamic case**, *Water S.A.*, 14, 4, 207-218

PATENTS

- P1. Lewis, A.E. and Nathoo, J., 2010. **"Method of separating components out of a eutectic solution"** South African Provisional Patent Application, 2008/07293;PCT Patent Application PCT/IB2009/006612. Patent granted in South Africa, ZA Patent No. 2011/01228, 26 October 2011

BOOKS, CHAPTERS IN BOOKS AND PROCEEDINGS AUTHORED AND/OR EDITED

- B1. Lewis, A.E., **Precipitation of Heavy Metals**, in Lens, P., Rene, E. Lewis, A.E and Sahinkaya, E.(Eds), **Sustainable Technologies for Heavy Metal Removal from Soils, Solid Wastes and Wastewater**,

in Lichtfouse, E., Schwarzbauer, J., and Didier, R., Environmental Chemistry for a Sustainable World, Springer, <https://link.springer.com/book/10.1007/978-3-319-58622-9>

- B2. Lewis, A.E., Chapter 9.8: **Crystallization** in Kawatra K., Anderson, C. and Young, C. (Eds) **SME Mineral Processing and Extractive Metallurgy Handbook**, Society of Mining Engineers of the American Institute of Mining, Metallurgical, and Petroleum Engineers (in press)
- B3. Lewis, A.E., Chapter 9.9: **Precipitation** in Kawatra K., Anderson, C. and Young, C. (Eds) **SME Mineral Processing and Extractive Metallurgy Handbook**, Society of Mining Engineers of the American Institute of Mining, Metallurgical, and Petroleum Engineers (in press)
- B4. Andreassen, J-P and Lewis, A.E., **Classical and Nonclassical Theories of Crystal Growth**, in Van Driessche, A.E.S., Kellermeier, M., Benning, L.G. and Gebauer, D. (Eds), **New Perspectives on Mineral Nucleation and Growth**, From Solution Precursors to Solid Materials, Springer. pp137-154.
- B5. Lewis, A.E., McMichael, L. and Glazewski J., 2016. **Chapter 9: Water Quality, Fracking Fluids and Legal Disclosure**. Hydraulic fracturing in the Karoo: Critical Legal and Environmental Perspectives, Juta and Co. pp245-263
- B6. Lewis, A.E., Seckler, M., Kramer, H.J.M. and van Rosmalen, G.M., 2015. **Industrial Crystallization: Fundamentals and Applications**, Cambridge University Press <http://www.cambridge.org/9781107052154>
- B7. Lewis, A.E. and Olsen, C. (eds) 2007. BIWIC 2007. **14th Bremen International Workshop on Industrial Crystallization**, September 9th – 11th 2007, University of Cape Town, Cape Town, South Africa, IOS Press BV, Amsterdam, The Netherlands, 1-284 ISBN:978-1-58603-790-1
- B8. Ozinsky, A.E., 2010. Chapter 23: **Purple Reign, November 1989**. 1989: Democratic Revolutions at the Cold War's End; A brief history with documents, Padraic Kenney. Bedford St. Martins ISBN 13: 978-0-312-48766-9

WATER RESEARCH COMMISSION PUBLISHED REPORTS

- B9. Chivavava, J., Jooste, D., Peters, E. Ndoro, D., Heydenrych, H., Rodriguez Pascual, M., and Lewis, A.E. October 2015. **Continuous Eutectic Freeze Crystallisation**, Research Project K5/2229, Water Research Commission, Private Bag X03, Gezina, 0031, South Africa
- B10. Nduna, M., and Lewis, A.E., **Removal of Metal Ions from Industrial Effluents and Acid Mine Drainage by Metal Sulphide Precipitation**, 2014, Research Project K5/2108, Water Research Commission, Private Bag X03, Gezina, 0031, South Africa
- B11. Randall, D.G., Rodriguez Pascual, M., Nathoo, J., Reddy, S., Apsey, G., Kapembwa, M., Egan, T., Chivavava, J. and Lewis, A.E., September 2013. **Extended Investigations into Recovery of Water and Salts from Multi-component Hypersaline Brines using Eutectic Freeze Crystallization**, Research Project K5/2012, Water Research Commission, Private Bag, X03, Gezina, 0031, South Africa
- B12. Lewis, A.E., Nathoo, J., Randall, D., Zibi, L. and Jivanji, R., May 2010. **Novel technology for recovery of water and solid salts from hypersaline brines: Eutectic Freeze Crystallization**, Research Project No.1727/1/10, Water Research Commission, Private Bag, X03, Gezina, 0031, South Africa
- B13. Lewis, A.E., Nathoo, J. and Mokone, T., October 2008. **Reactor design for metal precipitation in mine water treatment**, Research Project 1729/1/08, Water Research Commission, Private Bag, X03, Gezina, 0031, South Africa
- B14. Lewis, A.E. and Nathoo, J., January 2006. **Prevention of calcium sulphate crystallization in water desalination plants using Slurry Precipitation and Recycle Reverse Osmosis (SPARRO)**,

Research Project 1372/1/06, Water Research Commission, Private Bag, X03, Gezina, 0031, South Africa

- B15. Gopal, H., Harrison S.T.L., van Hille, R., Icggen, B., Jacobs, T., Lewis, A.E., Moosa, S. and Pillay, V., May 2005. **An extended investigation of the mechanism and kinetics of bacterial sulphate reduction**, Research Project 1251/1/07, Water Research Commission, Private Bag, X03, Gezina, 0031, South Africa
- B16. Hansford, G.S., Harrison, S.T.L., Lewis, A.E., Moosa, S., Knobel, A. and Ristow, N.E., January 1999. **The mechanisms and kinetics of biological treatment of metal-containing effluent**, Research Project No.1080/1/04, Water Research Commission, Private Bag, X03, Gezina, 0031, South Africa
- B17. Ozinsky, A.E., Ekama, G.A. and Reddy, B.D., 1994. **Mathematical simulation of dynamic behaviour of secondary settling tanks**, Water Research Commission, Private Bag, X03, Gezina, 0031, South Africa
- B18. Dold, P.L., Wentzel, M.C., Billing, A.E, Ekama, G.A. and Marais, G.v.R, 1991. **Activated sludge system simulation programs: version 1.0, nitrification and nitrification/ denitrification systems**, Research Project, Water Research Commission, Private Bag, X03, Gezina, 0031, South Africa

THESES

- T1. Ozinsky, A.E., 1993. Mathematical simulation of dynamic behaviour of secondary settling tanks, PhD thesis, University of Cape Town.
- T2. Billing, A.E., 1987. Modelling techniques for biological systems, MSc thesis, University of Cape Town.

SCIENTIFIC/SCHOLARLY PRESENTATIONS AT CONFERENCES

International, published, peer-reviewed conference proceedings

- C1. Lewis, A.E., Zhang, Y. Gao, P., and Nazeeruddin, M.K. 2017. **Investigating Grain Growth of Perovskite Films from One-Step and Two-Step Deposition Methods: Implications for Photovoltaic Application**. *20th International Symposium on Industrial Crystallization (ISIC20)*, University College Dublin, Ireland. 3-6 September.
- C2. Aspelng, B.; Lewis, A.; Chivavava, J., 2017. **Continuous Eutectic Freeze Crystallization of Multi-component Brine**, *20th International Symposium on Industrial Crystallization (ISIC20)*, Dublin, Ireland 3-6 September; University College Dublin, Ireland 2017. 3-6 September.
- C3. Mangunda, C., Petersen, J. and Lewis, A. 2016. **An initial investigation into the effect of Fe (Iii) Concentration on the product characteristics of Fe (Iii) oxyhydroxide precipitates during lime precipitation**, *Proceedings of the XXVIII International Minerals Processing Conference (IMPC)*, Québec City, Canada, 11 -15 September,
- C4. Mangunda, C., Petersen, J. and Lewis, A. 2016. **An investigation into the effect of Fe(III) concentration of the product characteristics of Fe (III) oxyhydroxide precipitates from acid mine drainage and bio-hydrometurgical wastewater**, *SAIMM Southern African Institute of Mining and Metallurgy, Hydrometallurgy Conference*, Belmont Mount Nelson Hotel, South Africa, 1-3 August, 60
- C5. Jooste, D., Chivavava, J., and Lewis, A.E. 2016. **Ice scaling in continuous eutectic freeze crystallization**, *SAIMM Southern African Institute of Mining and Metallurgy, Hydrometallurgy Conference*, Belmont Mount Nelson Hotel, South Africa, 1-3 August, 20
- C6. Lewis, A.E. and Nduna, M., 2014. **Improving surface charge and particle size in precipitation of metal sulphides**, *19th International Symposium on Industrial Crystallization (ISIC19)*, Toulouse, France, 16-19 September, 234-237
- C7. Heydenrych, H., Rodriguez Pascual, M. and Lewis, A.E., 2014. **Economic and environmental evaluation of Eutectic Freeze Crystallization vs. reverse osmosis for brine water treatment at industrial scale**, *19th International Symposium on Industrial Crystallization (ISIC19)*, Toulouse, France, 16-19 September, 596-598
- C8. Peters, E., M., Rodriguez Pascual, M. and Lewis, A.E., 2014. **Effect of antiscalants during Eutectic Freeze Crystallization of reverse osmosis retentate**, *19th International Symposium on Industrial Crystallization (ISIC19)*, Toulouse, France, 16-19 September, 592-593

- C9. Nodoro, D., Rodriguez Pascual, M. and Lewis, A.E., 2014. **Application of continuous Eutectic Freeze Crystallization to multicomponent brines**, 19th International Symposium on Industrial Crystallization (ISIC19), Toulouse, France, 16-19 September, 207-208
- C10. Becheleni, E. M. A., Rocha, S. D. F., Rodriguez Pascual, M. and Lewis, A.E., 2014. **Assessment of phenol influence on growth and purity of Na₂SO₄ and ice crystals yield as well as synthetic solution treatment by Eutectic Freeze Crystallization**, 19th International Symposium on Industrial Crystallization (ISIC19), Toulouse, France, 16-19 September, 279-281
- C11. Rodriguez Pascual, M. and Lewis, A.E., 2014. **Coupled heat and mass transfer during Eutectic Freeze Crystallization**, 19th International Symposium on Industrial Crystallization (ISIC19), Toulouse, France, 16-19 September, 538-539
- C12. Lewis, A.E. and Rodriguez Pascual, M., 2014. **Eutectic Freeze Crystallization in the context of coal mining: past, present and future**, Southern Africa Institute of Mining and Metallurgy (SAIMM) – 21st Century Challenges to the Southern African coal sector, Gauteng, South Africa, 4-5 March (Invited paper)
- C13. Chivavava, J., Rodriguez Pascual, M. and Lewis, A.E., 2013. **Effect of operating conditions on product quality in continuous Eutectic Freeze Crystallization**, 20th Bremen International Workshop on Industrial Crystallization (BIWIC), Odense, Denmark, 18-20 September, 231-238
- C14. Egan, T., Rodriguez Pascual, M. and Lewis, A.E., 2013. **In Situ growth measurements of sodium sulphate during cooling crystallization**, 20th Bremen International Workshop on Industrial Crystallization (BIWIC), Odense, Denmark, 18-20 September, 68-75
- C15. Hendricks, U., Rodriguez Pascual, M. and Lewis, A.E., 2013. **Investigating precipitation mechanisms of sparingly soluble salts using shock-freeze TEM**, 17th International Conference on Crystal Growth and Epitaxy (ICCGE-17) Warsaw, Poland, 11-16 August, 143-144
- C16. Rodriguez Pascual, M. and Lewis, A.E. 2013. **A novel stirred scraped wall crystallizer designed for melt and Eutectic Freeze Crystallization**, 17th International Conference on Crystal Growth and Epitaxy (ICCGE-17) Warsaw, Poland, 11-16 August, 144-145
- C17. Lewis, A.E., 2012. **Challenges and opportunities in precipitation**, 19th Bremen International Workshop on Industrial Crystallization (BIWIC), Tianjin, China, September 2012, Keynote address
- C18. Kapembwa, M., Rodriguez Pascual, M., Randall, D. G. and Lewis, A.E., 2012. **Ice growth mechanisms in electrolyte aqueous solutions**, 19th Bremen International Workshop on Industrial Crystallization (BIWIC), Tianjin, China, 7-9 September, 15-22
- C19. Hendricks, U., Rodriguez Pascual, M. and Lewis, A.E., 2012. **Investigating barium sulphate precipitation kinetics using digital holographic microscopy**, 19th Bremen International Workshop on Industrial Crystallization (BIWIC), Tianjin, China, 7-9 September, 414-421
- C20. Randall, D.G. and Lewis, A.E., 2012. **Treatment of textile wastewaters using Eutectic Freeze Crystallization**, International Water Association World Water Congress and Exhibition, Busan, South Korea, 16 – 21 September
- C21. Lewis, A.E. and Randall, D.G., 2011. **Using Eutectic Freeze Crystallization to treat a Range of Brines, Desalination and Environment: A Water Summit**, Rotana Beach, Abu Dhabi, 29 October – 1 November
- C22. Nortier, P., Chagnon, P. and Lewis, A.E., 2011. **Modelling the Solubility in Bayer Liquors: the contribution to chemometrics**, 18th Bremen International Workshop on Industrial Crystallization (BIWIC), TU Delft, 7-9 September
- C23. Lewis, A.E., Mangere, M., Mokone, T., van Hille, R.P., Randall, D.G. and Hendricks, U., 2011. **Precipitation at very high supersaturations – a challenge for classical theory and industrial applications**, 18th International Symposium on Industrial Crystallization (ISIC18), Zurich, Switzerland, 13-16 September, 54-55
- C24. Randall, D.G., Nathoo, J., Genceli, F.E., Kramer, H.J.M., Witkamp, G.J. and Lewis A.E., 2011. **Determination of the metastable ice zone for a sodium sulphate system**, 18th International Symposium on Industrial Crystallization (ISIC18), Zurich, Switzerland, 13-16 September 502-503
- C25. Beck, R., Mohamed, R., Lewis, A.E. and Andreassen, J-P., 2011. **Growth and morphology of the vaterite polymorph of calcium carbonate at constant supersaturation**, 18th International Symposium on Industrial Crystallization (ISIC18), Zurich, Switzerland 13-16 September, 218-219
- C26. Jivanji, R., Nathoo, J., van der Merwe, W., Human, A. and Lewis, A.E., 2011. **Application of Eutectic Freeze Crystallization to the treatment of mining wastewaters**, 22nd World Mining Congress & Expo 2011, Istanbul, Turkey, 11-16 September, 2, 345-350

- C27. Randall, D.G., Nathoo, J. and Lewis, A.E., 2011. **Recovery of calcium sulphate from an aqueous waste stream by Eutectic Freeze Crystallization**, 2nd Regional Conference of the Southern African Young Water Professionals, Pretoria, South Africa, 3-5 July
- C28. Mangere, M., Nathoo, J., Naidoo, K., Venter, G. and Lewis, A.E., 2010. **Investigation into the kinetics and mechanisms of selenium precipitation from copper sulphate solution using sodium sulphite as the reductant**. British Association of Crystal Growth Annual Meeting, Manchester, U.K., 5-7 September
- C29. Mangere, M., Nathoo, J. and Lewis, A.E., 2010. **Nucleation kinetics of selenium (+4) precipitation from acidic copper sulphate solution**, 17th Bremen International Workshop on Industrial Crystallization (BIWIC), Halle, Germany, 8-10 September
- C30. Ntuli, F., and Lewis, A. E., 2010. **The Precipitation Kinetics of Nickel Powder Produced by Hydrogen Reduction in Commercial Batch Autoclaves**. In American Institute of Physics Conference Series (1247) pp. 301-312. Chicago
- C31. Ntuli, F. and Lewis, A.E., 2009. **An investigation into the particulate processes active during the precipitation of nickel powder**, World Congress on Engineering and Computer Science (WCECS) Conference, San Francisco, USA, 20-22 October
- C32. Reddy, S.T., Kramer, H.J.M., Lewis, A.E. and Nathoo, J., 2009. **Investigating factors that affect separation in a Eutectic Freeze Crystallization process**, International Mine Water Conference, Pretoria, South Africa, 19-22 October, 649-655
- C33. Nathoo, J., Jivanji, R. and Lewis, A.E., 2009. **Freezing your brines off: Eutectic Freeze Crystallization for brine treatment**, International Mine Water Conference, Pretoria, South Africa, 19-22 October, 431-437
- C34. Mokone, T., van Hille, R.P. and Lewis, A.E., 2009. **Mechanisms responsible for particle formation during metal sulphide precipitation processes**, International Mine Water Conference, Pretoria, South Africa, 19-22 October, 343-350
- C35. Randall, D.G. and Lewis, A.E., 2009. **Seeding for selective salt recovery during Eutectic Freeze Crystallization**, International Mine Water Conference, Pretoria, South Africa, 19-22 October, 639-646
- C36. Bhikha, H., Lewis, A.E. and Deglon, D.A., 2009. **Water minimisation at Skorpion Zinc: A systemic approach to process optimisation**, Minerals Engineering International, Cape Town, South Africa, 6-7 April
- C37. Nathoo, J., Matjie, R.H. and Lewis, A.E. 2009. **Investigating the removal of scaling contaminants from a gas liquor stream at Secunda Sasol Synfuels using alumina in continuous mode**, Minerals Engineering International, Cape Town, South Africa, 6-7 April
- C38. Lewis, A.E., Randall, D.G., Reddy, S., Jivanji, R. and Nathoo, J., 2009. **Worth its salt – How Eutectic Freeze Crystallization can be used to recover water and salt from hypersaline mine waters**, AusIMM Water in Mining Conference, Perth, Australia, 5-11
- C39. Reddy, S.T., Lewis, A.E., Witkamp, G.J., van Spronsen, J., Kramer, H. and van Rosmalen, G.M., 2008. **Recovery of Na₂SO₄·10H₂O from a reverse osmosis retentate by eutectic freeze technology**, In Janssens, P., (ed), 17th International Symposium on Industrial Crystallization (ISIC17), Maastricht, The Netherlands, 14-17 September, 245 - 253
- C40. Andreassen, J.P., Flaten, E.M., Beck, R. and Lewis, A.E., 2008. **Investigations of spherulitic growth in industrial crystallization processes**, In Janssens, P., (ed), 17th International Symposium on Industrial Crystallization (ISIC17), Maastricht, The Netherlands, 14-17 September
- C41. Ntuli, F. and Lewis, A.E., 2007. **Precipitation kinetics of nickel in the presence of iron**, , In A.E. Lewis and C. Olsen (eds), 14th Bremen International Workshop on Industrial Crystallization (BIWIC), Cape Town, South Africa, 9-11 September, 237-244
- C42. Hove, M., van Hille, R. and Lewis, A.E., 2007. **The effect of different types of seeds on the oxidation and precipitation of iron from homogeneous solutions**, In A.E. Lewis and C. Olsen (eds), 14th Bremen International Workshop on Industrial Crystallization (BIWIC), 9-11 September, Cape Town, South Africa, 108-118
- C43. Lewis, A.E., Nathoo, J. and Glück, T., 2006. **Identifying critical operating parameters and mechanism for a manganese sulphide precipitation process**, 13th Bremen International Workshop on Industrial Crystallization (BIWIC), Delft, The Netherlands, 13-15 September
- C44. Reddy, S.T. and Lewis, A.E., 2006. **Water and Salt Recovery from Brine Solutions**, 13th Bremen International Workshop on Industrial Crystallization (BIWIC), Delft, The Netherlands, 13 -15 September

- C45. Lewis, A.E. and Hounslow, M.J., 2006. **The population balance approach for modelling crystallization and other multiphase processes**, 2006 Parker Centre Hydrometallurgy Conference, Perth, Australia, May 2006, Keynote address
- C46. Kalman, H. and Lewis, A.E., 2006. **Recent research developments in particle technology in the Middle East and Africa**, 5th World Congress on Particle Technology, Lake Buena Vista, Florida, USA, 23-27 April
- C47. Lewis, A.E. and Hounslow, M.J., 2005. **Identifying mechanisms of nickel precipitation in a hydrogen reduction process**, In J. Ulrich, (ed), 16th International Symposium on Industrial Crystallisation (ISIC16), Dresden, Germany, 11-14 September, 391-398
- C48. Lewis, A.E. and Swartbooi, A., 2005. **Factors affecting metal removal in mixed sulphide precipitation**, In J. Ulrich, (ed), 16th International Symposium on Industrial Crystallisation (ISIC16), Dresden, Germany, 11-14 September, 279-285
- C49. Lewis, A.E. and van Hille, R.P., 2005. **Complexity in Sulphide Precipitation**, T. Subbaiah, (ed), **Emerging Trends in Mineral Processing and Extractive Metallurgy**, Bhubaneswar, India, 13-14 June, 298-305
- C50. van Hille, R., Foster, T., Storey, A., Duncan, J. and Lewis, A.E., 2004. **Heavy metal precipitation by sulphide and bicarbonate: evaluating methods to predict anaerobic digester overflow performance**, In A.P. Jarvis, B.A. Dudgeon, and P.L. Younger, (eds), *Mine Water 2004: Process, Policy and Progress*, Newcastle upon Tyne, 19-23 September, 141-150
- C51. Lewis, A.E. and van Hille, R.P., 2003. **Metal removal: crystallising the problem**, In L. Lorenzen, D.J. Bradshaw, C. Aldrich, J. Eksteen, M. Wright, E. Thom, (eds), *Proceedings of the XXII International Minerals Processing Conference (IMPC)*, Cape Town, South Africa, 28 September–3 October, 195
- C52. Ochieng, A., Pearce, H. and Lewis, A.E., 2003. **A CFD simulation of the hydrodynamics of a reactor with draft tube**, L. Lorenzen, D.J. Bradshaw, C. Aldrich, J. Eksteen, M. Wright, E. Thom, (eds), *Proceedings of the XXII International Minerals Processing Conference (IMPC)*, Cape Town, South Africa, 28 September–3 October, 241
- C53. Petersen, K., Lacour, S., van Hille, R.P. and Lewis, A.E., 2003. **Copper sulphide precipitation: where theory meets reality**, L. Lorenzen, D.J. Bradshaw, C. Aldrich, J. Eksteen, M. Wright, E. Thom, (eds), *Proceedings of the XXII International Minerals Processing Conference (IMPC)*, Cape Town, South Africa, 28 September–3 October, 441
- C54. Swartbooi, A., van Hille, R. and Lewis, A.E., 2003. **An investigation into the precipitation of nickel and cobalt as sulphides**, L. Lorenzen, D.J. Bradshaw, C. Aldrich, J. Eksteen, M. Wright, E. Thom, (eds), *Proceedings of the XXII International Minerals Processing Conference (IMPC)*, Cape Town, South Africa, 28 September–3 October, 440
- C55. Lewis, A.E., Petersen, K. and Lacour, S., 2002. **Copper removal from acid mine drainage using a pellet reactor**, A. Chianese, (ed), 15th International Symposium on Industrial Crystallisation (ISIC15), Sorrento, Italy, 15-18 September, 467-472
- C56. Lewis, A.E., Nathoo, J., Seewoo, S. and Lacour, S., 2002. **Prevention of scaling in mine waters using Slurry Precipitation and Recycle Reverse Osmosis (SPARRO)**, A. Chianese, (ed), 15th International Symposium on Industrial Crystallisation (ISIC15), Sorrento, Italy, 15-18 September, 1443-1448
- C57. Butler, B.K., Guillard, D., White, E.T. and Lewis A.E., 2001. **Metal Carbonate and Lactose – Two Environmental Crystallisations**, *Proceedings of the 6th World Congress of Chemical Engineering*, Melbourne, Australia, 23-27 September, ISBN 0734022018
- C58. Lewis, A.E. and Roberts, M., 2001. **Quantifying morphology of nickel crystals Copper, Cobalt, Nickel and Zinc Recovery**, Victoria Falls, Zimbabwe, 16 – 18 July, 421-428
- C59. Lewis A.E., Hugo A. and Beautement, C., 1999. **Waste characterisation, testing and modification: a case study for secondary lead slag**, In: C.V. Leon, (ed), *International Mining and Environment Congress, Clean Technology: Third Millennium Challenge*, Lima, Peru, Colegio de Ingenieros del Peru, Lima, 13-16 July, 471-482:
- C60. Lewis, A.E. and Petrie, J.G., 1998. **Process development for biological treatment of metal sulphate wastewaters**. In L. Bonomo and C. Nurizzo, (eds), 2nd International Conference, *Advanced Wastewater Treatment (IAWQ), Recycling and Reuse*, Milan, Italy, 14-16 September, 639-648
- C61. Lewis, A.E. and Dry, M., 1998. **Secondary lead refining: A model to define acceptable limits for a slag treatment process**, S.R. Rao, L.M. Amaratunga, G.G Richards and P.D. Kondos, (eds), *Waste*

- Processing and Recycling in Mineral and Metallurgical Industries III, The Metallurgical Society of CIM, Quebec, Canada, 16-19 August, 195-208
- C62. Lewis, A.E., 1998. **Treatment of secondary lead residues for environmental protection: waste minimisation through process characterisation and optimisation**, In S.R. Rao, L.M. Amaratunga, G.G Richards and P.D. Kondos, (eds), Waste Processing and Recycling in Mineral and Metallurgical Industries III, The Metallurgical Society of CIM, Quebec, Canada, 16-19 August, 181-194

INTERNATIONAL CONFERENCES WITHOUT PUBLISHED PROCEEDINGS

- C63. Lewis, A.E. and Hounslow, M.J., 2003. **Development and testing of phenomenological models and solution algorithms for the Crystallisation Research Tool**, US Department of Energy Crystallisation Project Team Meeting, Groton, Connecticut, USA, 18-19 September
- C64. Jawitz, J. and Lewis, A.E., 2001. **Using SOLO to assess understanding in a final year engineering design project**, First Electronic International Conference on Engineering Education, August
- C65. Butler, B.K. and Lewis, A.E., 2000. **Waste not, want not: metal precipitation from effluent streams**. Minerals Engineering 2000, Cape Town, 13 - 15 November
- C66. Guillard, D., Lewis, A.E. and Butler, B.K., 2000. **Nickel carbonate precipitation in a pellet reactor**. Minerals Engineering 2000, Cape Town, 13 - 15 November
- C67. Case, J., Gunstone R. and Lewis, A.E., 2000. **Approaches to learning in a Second Year Chemical Engineering Course**. American Education Research Association AERA Meeting, New Orleans, USA, April. Not presented personally
- C68. Case, J., Gunstone R. and Lewis, A.E., 2000. **The impact of students' perceptions on their metacognitive development: a case study**. American Education Research Association AERA Meeting, New Orleans USA, April. Not presented personally
- C69. Case, J., Gunstone, R. and Lewis, A.E., 1999. **Student perceptions of new approaches to teaching and assessment in an undergraduate chemical engineering course**. 8th European Conference for Research on Learning and Instruction, Advancing Learning Communities In The New Millennium, Gothenburg, Sweden, 24-28 August. Not presented personally
- C70. Case, J., Gunstone, R. and Lewis, A.E., 1999. **Mapping students' metacognitive development**. 30th Annual Conference of the Australasian Science Education Research Association (ASERA), Rotorua, New Zealand, 8 -11 July. Not presented personally
- C71. Case, J., Jawitz, J., Lewis, A.E. and Fraser, D.M.F., 1999. **Cover Less, Uncover More: A Case Study in 2nd Year Chemical Engineering**. SA Association of Researchers in Maths and Science Education conference, (SAARMSE), Harare, 13-16 January. Not presented personally

POPULAR CONTRIBUTIONS

1. Lewis, A.E. 2015. Popular talk: **"Eutectic Freeze Crystallization, and why we should be cool about it..."**, The Astronomical Society of Southern Africa (ASSA), Garden Route Centre, 18 July 2015
2. Lewis, A.E., 2014. **Modern Alchemy: Turning toxins into treasure**, Café Scientifique, Irma Stern Museum, Rosebank, Cape Town, 3 June 2014, <http://www.youtube.com/watch?v=aDPPwJxjUL4>
3. Lewis, A.E., 2014. **Modern Alchemy**, BBC World Service - The Forum, Radio program, London, England, 15 January 2014, **Radio broadcast** http://www.bbc.co.uk/iplayer/episode/p01q5cg6/The_Forum_Modern_Alchemy/
4. Lewis, A.E., 2012. **Visions for Chemical Engineering**, Lappeenranta University of Technology, Video recording, <http://www.youtube.com/watch?v=E332uTutP2E>
5. Lewis, A.E., 2012. **Change the world and study Chemical Engineering**, Lappeenranta University of Technology, Video recording, http://www.youtube.com/watch?v=G-qQo8_6Drg
6. Lewis, A.E., 2011. **Be bold and mighty forces will come to your aid**, TEDx, Cape Town, Ratanga Junction, Canal Walk, Western Cape, April, 2011 <http://www.youtube.com/watch?v=IWsqSRos1LY>

OTHER CONTRIBUTIONS

1. Lewis, A.E., 2014. **Modern Alchemy: Turning toxins into treasure**, AMIRA International Africa, Board Sessions, Johannesburg, South Africa, 8th May 2014

2. Lewis, A.E., 2014. **Innovation through insight – crystallization in water treatment**, *ESASTAP – European South African Science and Technology Advancement Programme South Africa Water Research Workshop*, Brussels, Belgium, 20-21 February, 2014
3. Lewis, A.E., 2013. **Exploiting the multi functionality of crystallization**, *Minerals to Metals Student Research Day*, Atlantic Imbizo, Western Cape, 7 November 2013, **Keynote address**
4. Lewis, A.E., 2013. **Going against the flow – a story about water treatment**, *Glenwood House College and Nelson Mandela Metropolitan University (NMMU) SCIEX 2013*, George, Western Cape, 26-27 July 2013, **Keynote address**
5. Lewis, A.E., 2011. **“Freeze desalination, recovery of salts from brine”**, Presentation 1: Principles of EFC, and 2: Novel Applications, *Proxa Technical Workshop*, Silverwood Manor, Bryanston, Gauteng, September 2011, **Keynote address**
6. Lewis, A.E., 2011. **Beneficiation of mining wastewater, Water Institute of South Africa – WISA**, *Symposium on Sustainable Water 2030: A Mining Perspective*, Gauteng, October 2011, **Keynote address**
7. Lewis, A.E. and Randall, D.G., 2011. **Technologies on precipitation and crystallization of salts and metal sulphides from aqueous streams with a view to values recovery from these materials, including that of clear water**, *SAIMM Workshop*, Vineyard Hotel, Claremont, Western Cape, August 2011
8. Lewis, A.E., 2011. **Making water out of waste, Eutectic Freeze Crystallization**, Presentation to *Critical Thinkers’ Forum*, hosted jointly by the Public Understanding of Biotechnology Programme of SAASTA (NRF) and the National Science and Technology Forum (NSTF), Birchwood Conference Centre, Boksburg, Gauteng, July 2011
9. Lewis, A.E., 2009. **“Industrial crystallization in South Africa”**, *Annual Industrial Seminar Day*, KTH, Stockholm, June 2009, **Keynote address**
10. Hounslow, M.J. and Lewis, A.E., 2003. **Modelling of particulate systems**, *American Association of Crystallization Technology Workshop*, Groton, Connecticut, USA, September 2003, **Keynote address** - not presented personally
11. Lewis, A.E. and Hounslow, M.J., 2003. **As simple as possible, but not simpler: linking population, material and energy balances for crystalliser modelling**, *British Association of Crystal Growth Annual Meeting 2003*, Oxford, England, September 2003, **Keynote address**
12. Lewis, A.E., 2003. **Women in Engineering in Sub-Saharan Africa**, *International Institute of Women in Engineering Seminar 2003*, Paris, France, July 2003, **Keynote address**

RESEARCH SUPERVISION

◆ Postgraduate Graduated:

1. **Debbie Jooste**, Ice scaling in continuous eutectic freeze crystallization, MSc, June 2016
2. **Chiara Maharaj**, Treatment of a multicomponent mining effluent using milk of lime in a fluidized bed crystallizer, MSc, June 2016
3. **Sibongiseni Gqebe**, Improving the settleability of a metal sulphide suspension by the application of a magnetic field, MSc, December 2015
4. **Edward Peters**, Effect of antiscalants during eutectic freeze crystallization of a reverse osmosis retentate, MSc June 2015
5. **Vuyiswa Dube**, Study of selective removal of CoS and NiS during purification of MnSO₄, MSc June 2015
6. **Emily Mayer**, Case study for an economical evaluation of Eutectic Freeze Crystallization and Evaporative Crystallization for a Brazilian refinery waste stream, PhD, December 2015
7. **Brian Willis**, Development of measurement techniques for aggregation in precipitation systems, MSc, June 2014
8. **Tim Egan**, Factors affecting the incorporation of impurities during cooling crystallisation, MSc, December 2013
9. **Jemitiyas Chivavava**, Effect of operating conditions on product quality in continuous Eutectic Freeze Crystallization, MSc, December 2013

10. **Michael Kapembwa**, Heat and mass transfer effects of ice growth mechanisms in water and aqueous solutions, MSc, June 2013
11. **Moses Nduna**, Post precipitation treatment of CuS particles to improve settleability, MSc, June 2013
12. **Emily Musil**, Developing methods to measure the precipitation kinetics of sparingly soluble systems, MSc, December 2011
13. **Grant Apsey**, Impurities in crystals formed by Eutectic Freeze Crystallization, MSc, December 2011
14. **Robert Paradza**, An investigation into the suspension, attrition and breakage of nickel crystal during the nickel reduction process, MSc, June 2011
15. **Rinesh Jivanji**, Industrial application of Eutectic Freeze Crystallization, MSc, June 2011
16. **Cornelia Ras**, An industrial ecology approach to salts-related, environmental sustainability problems in a large, inland industrial complex, MSc, June 2011
17. **Thebe Mokone**, Metal sulphide precipitation: effect of operational parameters on particle characteristics and process efficiency, PhD, December 2010
18. **Dyllon Randall**, Development of a brine treatment protocol using Eutectic Freeze Crystallization, PhD, December 2010
19. **Premesh Govan**, Measurement and modelling of solubility data for sparingly soluble precipitation systems, MSc, December 2010
20. **Botlhe Mokgethi**, Investigation of crystallization kinetics in a turbulent environment, MSc, December 2010
21. **Yu Lun Chiang**, Antisolvent gibbsite crystallization from synthetic Bayer liquor, MSc, June 2010
22. **Murehwa Mangere**, Investigation into the kinetics, mechanisms and particle characteristics of selenium precipitation from copper sulphate solution, MSc, June 2010
23. **Ndisha Mbedzi**, An investigation into the removal of aluminosilicates scaling species by activated alumina, MSc, June 2010
24. **Lindizwe Zibi**, Industrial brine characteristics and modelling, MSc, June 2010
25. **Rendani Ramaru**, Struvite precipitation in a fluidised bed reactor, MSc, December 2009
26. **Harshad Bhika**, Technological challenges in mineral processing and extractive metallurgy, MSc, June 2009
27. **Mfandaidza Hove**, Iron precipitation in acid mine drainage, PhD, December 2008
28. **Freeman Ntuli**, Mechanisms of precipitation in the reduction of nickel via hydrogen, PhD, December 2008
29. **Barry McGeorge**, Mechanisms of rhodium precipitation, MSc, December 2007
30. **Nazneen Karbanee**, Investigation into the precipitation of mixed cobalt and nickel sulphides, MSc, June 2007
31. **Celo Mause**, Population balance modelling in nickel reduction systems, MSc, December 2006
32. **Aoyi Ochieng**, A hydrodynamic study of nickel suspension in stirred tanks, PhD, December 2005
33. **Ashton Swartbooi**, Cobalt and nickel sulphide precipitation in a fluidised bed reactor, MSc, December 2005
34. **Venusan Pillay**, The simulation of electrolyte systems: the system K-Na-Mg-Cl-SO₄-H₂O, MSc, December 2004
35. **Jeeten Nathoo**, Optimisation of electrolyte composition and operating parameters for the electropolishing of 304 stainless steel, MSc, December 2003
36. **Shilpa Seewoo**, Morphology control in gypsum precipitation, MSc, December 2003
37. **Karen Peterson**, Copper sulphide precipitation for treatment of acid mine drainage, MSc, December 2002
38. **Craig Beaute ment**, Treatment of secondary lead slag for environmental protection, MSc, June 2001
39. **Damien Guillard**, Nickel carbonate precipitation in a fluidised bed reactor, MSc, December 2001
40. **Jonathan Centurion-Harris**, Studies in the crystallisation behaviour of potassium nitrate, MSc (co-supervised with Prof G van Rosmalen, TU Delft, Netherlands), December 2000
41. **Antony Knobel**, A mathematical model of a high sulphate wastewater anaerobic treatment system, MSc, December 1999
42. **Leonore Cairncross**, Simulation of ionic precipitation of metal hydroxides from industrial waste water, MSc (co-supervised with Prof JG Petrie, University of Sydney), December 1998
43. **Alex Pehlken**, Investigation into treatment of secondary lead slag, University of Aachen, Diplomarbeit, December 1997

◆ **Post-Doctoral Fellows supervised**

1. **Dr Sivapregasen Naidoo**, PhD Western Cape, South Africa, 2010
 2. **Dr Gillian Balfour**, PhD Cape Town, South Africa, 2007 and 2008
 3. **Dr Vinit Mishra**, PhD New Delhi, India, 2007
 4. **Dr Christian Taty Costodes**, PhD Paris, France, 2004 and 2005
 5. **Dr YiFei Zhang**, PhD Beijing, China, 2004 and 2005
 6. **Dr Rob van Hille**, PhD Rhodes, South Africa, 2002, 2003 and 2004
 7. **Dr Stella Lacour**, PhD Limoges, France, 2001
 8. **Dr Bronwen Butler**, PhD Queensland, Australia, 2000
- ◆ **Currently supervised:**
1. **Brenda Mehlo**, Brine systems and characterisation, MSc
 2. **Genevieve Harding**, Brine systems and treatment processes, MSc
 3. **Benita Aspelng**, Yield and purity of salts recovered in a multi-component system using Eutectic Freeze Crystallization, MSc.
 4. **Senzo Mgabhi**, The kinetics of lime dissolution in acid mine drainage neutralization, MSc
 5. **Cledwyn Mangunda**, Non-intrusive measurements for Kinetics of Sparingly soluble salts, PhD
 6. **Hilton Heydenrych**, Systematic comparison of the effectiveness of water treatment processes, PhD
 7. **Umraan Hendricks**, Investigating the precipitation kinetics of sparingly soluble salts, PhD
 8. **Edmund Engelbrecht**, Production scale semi-batch rhodium-DETA precipitation model, PhD
 9. **Riccardo Diedricks**, The effect of operating conditions on the particle growth rate and thus on the product purity and process efficiency in the classical palladium precipitation process, MSc
- ◆ **Honours level**
1. **Gachoki Tracy Mbiyu and Zipporah Nyokangi**, Transformation of metastable Fe(III) oxyhydroxide precipitates in the treatment of AMD (Final Mark 71%), 2016
 2. **Linda Foster and Delisha-Ann Naicker**, Kinetics of perovskite formation and crystallization (Final Mark 71%), 2016
 3. **Sarah Adam and Julia McGregor**, Comparison of a heating crystallization with a cooling crystallization process for calcium sulphate removal from a multicomponent brine, (Final Mark 79%) 2015
 4. **Letlethu Beseti and Reuben Dlamini**, Effects of Feed Flow Rate and Concentration on Ferric Sulphate Oxyhydroxide Precipitate Formation, (Final Mark 69%) 2015
 5. **Chabala Kaongwa and Queen Rugaimukama**, Factors affecting scale formation in EFC, (Final Mark 67%) 2015
 6. **Jade Holt and Rosalind Stegman**, Economic comparison of gypsum precipitation in FBC versus an MSMR, (Final Mark 57%)2015
 7. **Sizwe Vidima and Bagcinele Dlamini**, In situ investigation of calcium sulphate scaling in a test cell, (Final Mark 63%) 2014
 8. **Amir Mohd Fauzi and Arthur Gajewski**, Optimised heat integration for a combined Reverse Osmosis and Eutectic Freeze Crystallization Process, (Final Mark 84%) 2014
 9. **Tesha Seeparsad and Chiara Maharaj**, Comparison of a Reverse Osmosis/Eutectic Freeze Crystallization process with a cycled Reverse Osmosis-Cooling Crystallisation process, (Final Mark 84%) 2014
 10. **Buhle Manana and Pfano Nembudani**, Eutectic Freeze Crystallization for treatment of textile waste concentrates, (Final Mark 68%) 2014
 11. **Piniel Bengesai and Hiren Makkan**, Stripping of ammonia from alkaline brine using a novel oscillating multi-grid reactor (Final mark 74%) 2013
 12. **Nicholas Fleischman and Megan Raymond**, Effect of antiscalants on the solubility, yield and purity of the products in an Eutectic Freeze Crystallization process (Final mark 79%) 2013
 13. **Relebohile Molaoa and Relebohile Sefako**, Treating heap leach acid using an Eutectic Freeze Crystallization process (Final mark 65%) 2013
 14. **Sibongiseni Gqebe and Faith Ndzimandze**, Modelling and comparison of acid mine drainage treatment processes (Final mark 65%) 2013
 15. **Firdous Alexander and Daniella Faria**, Economical and environmental evaluation of Eutectic Freeze Crystallization vs. reverse osmosis for water treatment (Final mark 73%) 2013

16. **Shadley Martin and Ayesha Rawoot**, Flow modelling of Eutectic Freeze Crystallization for multi-component brines (Final mark 73%) 2013
17. **Caitlin Moir and Kelly Brokelmann**, Determination of crystal defects and liquid-gas inclusions due to degasification bubble formation during cooling crystallization (Final mark 81%) 2012
18. **Alice Wong and Thilisha Moodley**, Using an alkaline mine wastewater for CO₂ sequestration (Final mark 59%) 2012
19. **Mesuli Zondo and Sarvesha Moodley**, FeS slurry for acid mine drainage treatment (Final mark 83%) 2012
20. **Mohamad Omar and Marasi Monyau**, Sulphate recovery from acid mine drainage (Final mark 73%) 2012
21. **Zethu Dlamini and Nicole Gounder**, Effect of morphology and crystal size distribution on gravitational separation during Eutectic Freeze Crystallization (Final mark 68%) 2012
22. **Estelle Mills and Andrew Payne**, Heat/mass transfer measurements during Eutectic Freeze Crystallization (Final mark 88%), 2011
23. **Rizqah Mohamed and Hilton Rossenrode**, Investigating the characteristics of scaling salts using Eutectic Freeze Crystallization (Final mark 87%), 2011
24. **Sairisha Ramnanan and Catherine Lukwayo**, Salt purity in Eutectic Freeze Crystallization (Final mark 76%), 2011
25. **Marc Bagley and Craig Zinn**, Recovery of dyes and salts from textile wastewaters using Eutectic Freeze Crystmeyerallization (Final mark 65%), 2011
26. **Alex Madden and Mark Middelhoven**, Manipulating crystallization temperatures in Eutectic Freeze Crystallization (Final mark 64%), 2010
27. **Wade Swannell and Matthew Amundsen**, Isotropic turbulence and its effect on precipitation processes (Final mark 53%), 2010
28. **Emily Musil and Nerisa Moodley**, Manganese purification by seeded precipitation (Final mark 74%), 2009
29. **Karen Ma, and Paul Mphengwa Mabala**, Control of particle characteristics in NiS precipitation (Final mark 64%), 2009
30. **Muneer Asmal and Rinesh Jivanji**, Brine analysis and modelling, (Final mark 80%), 2008
31. **Saud Edries and Niven Harku**, Eutectic Freeze Crystallization, (Final mark 72%), 2008
32. **Lauren Miller and Mitesh Chuahan**, Spherulitic growth, (Final mark 80%), 2008
33. **John Terreblanche and Matthew Fry**, Investigating selective removal of cationic scaling species from gas liquor using alumina (Final mark 80%), 2007
34. **Motlatsi Mabaso & Rendani Ramaru**, Removal and recovery of metal salts from acid mine drainage and industrial effluents (Final mark 67%), 2007
35. **Yu-Lun Chiang and Fabian Petersen**, Seeded precipitation for impurity removal (Final mark 75%), 2006
36. **Michelle Bennet and Premesh Govan**, Brine treatment for water recovery (Final mark 79%), 2006
37. **James Vardy and Sean Knight** Metal removal from acid mine drainage (Final mark 67%), 2006
38. **Sarashnee Reddy and Lynn Mortinson**, Scaling in solar water heaters (Final mark 64%), 2005
39. **Cello Mause and Keabetswe Molala**, The population balance as a tool for understanding crystallization (Final mark 72%), 2004
40. **Nazneen Karbanee and Bianca Carlse**, Chemical processing of novel anti-malarial drugs (Final mark 77%), 2004
41. **Eugene Delpont and Thehzeeb Akbar**, Effect of macromixing time on sodium bicarbonate precipitation (Final mark 65%), 2003
42. **Hermita Anand and Bo Robertse**, Sodium bicarbonate precipitation (Final mark 75%), 2002
43. **Angela Storey and Tamlyn Foster**: Mixed metal precipitation for treatment of acid mine drainage (Final mark 81%), 2002
44. **Jeeten Nathoo and Shilpha Seewoo**, The SPARRO process for desalination of calcium sulphate scaling waters (Final mark 79%), 2001
45. **Kar Luk and Ashton Swartbooi**, Performance of a multi impeller reactor for nickel precipitation (Final mark 76%), 2001
46. **Punish Chikowero and Lerato Motsilanyane**, Commissioning of a high pressure vessel for nickel precipitation (Final mark obtained: 64%), 2000
47. **Lasath Punyandeera**, Promoting size enlargement by reactor design (Final mark 51%), 2000

48. **Kelly Petersen and Mandy Roberts**, Characterisation of calcium oxide crystallization processes using a multiple technique approach (Final mark 73%), 2000
49. **Kenneth Kamurasi and Edward Theka**, Precipitation for removal of metals from acid mine drainage (Final mark 63%), 2000
50. **Thabo Kgogo and Semano Sekatle**, Promoting mixing to control nucleation in precipitation systems (Final mark obtained: 75%), 2000
51. **Glodina Gordon and Tessa Meyer**, Solids formation by precipitation in mineral processing streams (Final mark 66%), 1999
52. **Sarah Bross and Catherine Van Hoogstraten**, Recovery of elemental sulphur from soluble sulphides (Final mark 71%), 1999
53. **Kim Palmer and Jonathan Centurier-Harris**, Characterisation and assessment of hazardous waste (Final mark 81%), 1998
54. **Motshewa Matimolane and Thuto Mosholi**, Recovery of elemental sulphur from soluble sulphides (Final mark 61%), 1998
55. **Craig Beutement and Pathmenadin Padayachee**, Treatment of secondary lead waste for environmental protection (Final mark 63%), 1997
56. **Bruce Souter and Peter Fiene**, Modelling of a proposed process for the treatment of acid mine drainage (Final mark 74%), 1997
57. **Michael Dalby and Murray Roos**, Modelling of biological systems (co-supervised) (Final mark 73%), 1996
58. **David Sedgorowane and Bethuel Legabe**, Fundamentals of ionic precipitation of metal hydroxides (co-supervised) (Final mark 55%), 1996

SCHOLARLY ACTIVITIES

External Examination of Postgraduate Theses

- PhD thesis, University of British Columbia, Canada, 2013. **Mohammad Mokmeli**, Kinetics study of selenium and tellurium removal from copper sulphate-sulphuric acid solution.
- PhD thesis, University of Wageningen/UNESCO-IHE, Delft, The Netherlands, October 2013. **Denys Kristalia Villa Gomez**, Simultaneous sulphate reduction and metal precipitation in an inverse fluidized bed reactor.
- PhD thesis, University of Toronto, Toronto Canada, February 2010. **Ghazal Azimi**, Evaluation of the potential of scaling due to calcium compounds in hydrometallurgical processes.
- PhD thesis, Royal Institute of Technology, Stockholm, June 2009. **Kirsten Forsberg**, Crystallization of metal fluoride hydrates from mixed acid solutions.
- MSc thesis, North West University, May 2009. **D.J. Branken**, Separation of Zr and Hf via fractional crystallization of $K_2Zr(Hf)F_6$: A theoretical and experimental study.
- PhD thesis, University of Pretoria, 2004
- MSc thesis, University of Stellenbosch, January 2003.
- MTech thesis, Cape Technikon, March 1998

- Member of the Scientific Committee for the International Symposium on Industrial Crystallization (ISIC), since 2009
- Member of the Scientific Committee for the Bremen International Workshop on Industrial Crystallization (BIWIC), since 2006, incl 2017
- Journal referee for AIChEJ, Biotechnology & Bioengineering, Chemosphere, Crystal Growth & Design, Desalination, Hydrometallurgy, Industrial and Engineering Chemistry Research, Journal of Chemical & Engineering Data, Powder Technology, Separation and Purification Technology, Water Research, Water SA, SME

UNIVERSITY MANAGEMENT AND ADMINISTRATION

University:

- * Selection Committee for DVC: Teaching and Learning,
- * IF-Council working group on Private Security, member (2017 -
- * University Orator, (2010 – 2014)
- * URC Committee on Research Reviews, (2011-)

- * Senate Executive Committee, member (2004-2012)
- * Senate, member (2003-)
- * Invited Contributor to Symposium: "The University in Africa", (2006)
- * Selection Committee for Honorary Professors, Senate Representative, Chemical Engineering Department, (2006)

Faculty:

- * Faculty Examinations Committee, member (2013 -)
- * Dean's Advisory Committee, member (2013 -)
- * Promotion and Remuneration Committee, member (2013 -)
- * Various Faculty Selection Committees for Civil, Chemical, Electrical and Mechanical Engineering and Centre for Higher Education Development, member
- * PGPAC-Postgraduate Planning & Administration Committee, member (2011- 2012)
- * Task Group for the UCT Water Research Institute, convenor (2010-2012)
- * EBE Faculty Board, member (1996 -)
- * University Science Faculty Board as EBE Faculty Representative, member (2010-2011)
- * EBE URC Block Grants Committee, member (2010)
- * Working Group on Research for Academic Ad Hominem Promotions, convenor (2007- 2012)
- * Faculty Human Resources Committee, member (2007- 2012)
- * Committee of Assessors, Faculty of Engineering and the Built Environment, member (2006 -)
- * Faculty Cost Recovery Task Group, convenor
- * Faculty Working Group on Postgraduate Supervision, convenor
- * Faculty Equipment Committee, departmental representative

Department:

- * Head of Department (2013-2015)
- * Departmental Representatives Committee, member (2013 -)
- * SARChi Chair, Selection Committee, member (2011)
- * Postgraduate Studies, director (July-December 2006, 2011-2012)
- * Department of Chemical Engineering, deputy head of department (May 2010– March 2012)
- * Departmental Seminar Programme, convenor (2006)

CONTINUING EDUCATION

1. Lewis, A.E., 2015. . **"Introduction to EFC and to aqueous chemistry modelling"**, Course for Eskom participants, Eskom Research Centre, Rocheville, Gauteng, March 2015
2. Lewis, A.E., 2014. **"Understanding crystallization & precipitation processes"**, Course for industrial participants, Isisango Conference Centre, Midrand, Gauteng, March 2014
3. Lewis, A.E., 2011. **Solids suspension, attrition and breakage**, Presentation to Plant Personnel at Murrin Murrin, Australia, March 2011
4. Lewis, A.E., 2011. **Fundamental aspects of nickel reduction**, Presentation to Plant Personnel at Murrin Murrin, Australia, March 2011
5. Lewis, A.E., 2011. **Factors affecting gypsum morphology**, Presentation to Plant Personnel at Murrin Murrin, Australia, March 2011
6. Lewis, A.E., 2011. **Crystallisation and precipitation'**, Presentation to University of Stellenbosch, Faculty of Health Sciences, Department of Biomedical Sciences, Stellenbosch, May 2011
7. Lewis, A.E., Manganese Metal Company, 2010. **Challenges in sulphide crystallization**, MMC Offices, Nelspruit, Mpumalanga, February 2010
8. Lewis, A.E., 2009. **"Understanding industrial crystallization processes"**, Course for Exxaro - Zincor delegates at Zincor offices, Springs, Gauteng, October 2009
9. Lewis, A.E., 2007. **"Understanding crystallization & precipitation processes"**, Course for industrial participants in association with TU Delft (Prof GM van Rosmalen) Isisango Conference Centre, Midrand, Gauteng, March 2007
10. Lewis, A.E., 2006. **"Understanding an industrial purification process"**, course for industrial participants, Manganese Metal Company, Nelspruit, February 2006
11. Lewis, A.E., 2005. **"Precipitation for metal recovery and removal in hydrometallurgical processes"**, Presentation to Hydrometallurgy course for industrial participants, University of Cape Town, Jan/Feb 2004 and Jun/July 2005

12. Lewis, A.E., 2004. **“Industrial precipitation and crystallisation”**, Course for industrial and academic participants in collaboration with Prof M Seckler of the Institute for Technological Research (IPT), Cidade Universitária, Sao Paulo, Brazil, November 2004
13. Lewis, A.E., 2004. **“Crystallisation and precipitation as rate controlled molecular separations”**, SEPSA Separation Technology week, Potchefstroom University, Gauteng, November 2004
14. Lewis, A.E., 2004. Association for Crystallisation Technology, 13th Larson Workshop, Chicago Illinois, USA, one of 38 invited and funded academic delegates, , October 2004
15. Lewis, A.E., 2004. **“Precipitation: Understanding, optimisation and design”**, course for industrial participants, Zincor, Springs, Gauteng, September 2004
16. Lewis, A.E., 2004. **“Crystallisation and precipitation: Theory and practice”**. Course for industrial participants in association with TU Delft (Prof GM van Rosmalen) Isisango Conference Centre, Midrand, Gauteng, April 2004
17. Lewis, A.E., 2001. **“Controlling precipitation processes”**, Convenor of 3-day course presented at Glenburn Lodge, Gauteng; in collaboration with Prof GM van Rosmalen and A/Prof HM Kramer of Delft Technical University, The Netherlands, March 2001

RESEARCH/TECHNICAL REPORTS TO INDUSTRY

- TR1. Lewis, A.E., 2016. Analysis and Comparison of Crystalline Pharmaceutical Products Research Report, Fine Chemicals Corporation , March 2016
- TR2. Maharaj, C. Chivavava, J., Rodriguez Pascual, Lewis, A.E., 2016. Study on gypsum precipitation and recovery. Lhoist, Belgium, February 2016
- TR3. Lewis, A.E., Rodriguez Pascual, M. and Willis, B., 2013. Ammonia removal from brine, Botswana Ash (Pty) Limited (Botash), Botswana, August 2013
- TR4. Lewis, A.E., Rodriguez Pascual, M., Ndoro, D., Chivavava, J. and Nduna, M., 2013. Eutectic Freeze Crystallization for the treatment of heap leach acid, Proxa (Pty) Limited, Western Cape, August 2013
- TR5. Lewis, A.E., 2013. Potential for Eutectic Freeze Crystallization for Liquor Treatment, Johnson Matthey, Hertz, England, July 2013
- TR6. Lewis, A.E., 2013. Re-leaching of manganese waste, Manganese Metal Company, Nelspruit, Mpumalanga, June 2013
- TR7. Lewis, A.E., 2013b. Experimental design for maximising gypsum and aluminium hydroxide separation, Mintek, Gauteng, April 2013
- TR8. Lewis, A.E., 2013a. Maximising gypsum and aluminium hydroxide separation, Mintek, Gauteng, January 2013
- TR9. Lewis, A.E., Rodriguez Pascual, Nduna, M. and Craig, T-A., 2012. Salt impurity investigation, Botswana Ash (Pty) Ltd (Botash), Botswana, December 2012
- TR10. Lewis, A.E., Randall, D.G., Craig, T-A, Egan, T. and van Niekerk, W., 2012. Part B, Eutectic Freeze Crystallization for alkaline PGM stream treatment, Western Platinum Refinery, Lonmin, Gauteng, December 2012
- TR11. Lewis, A.E., Randall, D.G., Craig, T-A, Egan, T. and van Niekerk, W., 2012. Part A, Eutectic Freeze Crystallization for alkaline PGM stream treatment, Western Platinum Refinery, Lonmin, Gauteng, August 2012
- TR12. Lewis, A.E., 2011. Gold precipitation – crude precipitation process analysis and optimisation, Western Platinum Refinery, Lonmin, Gauteng, November 2011
- TR13. Lewis, A.E., Randall, D.G., Craig, T-A, Egan, T. and van Niekerk, W., 2011. Eutectic Freeze Crystallization for PGM effluent treatment, Western Platinum Refinery, Lonmin, Gauteng, August 2011
- TR14. Lewis, A.E., 2011. Palladium crystallization – crude precipitation process analysis and optimisation, Western Platinum Refinery, Lonmin, Gauteng, June 2011
- TR15. Lewis, A.E., 2011c. Nickel hydrogen reduction, site visit, report and presentation, Murrin Murrin, Western Australia, March 2011
- TR16. Lewis, A.E., 2011b. Solids suspension, attrition and breakage, site visit, report and presentation, Murrin Murrin, Western Australia, March 2011
- TR17. Lewis, A.E., 2011a. Factors affecting gypsum morphology, site visit, report and presentation, Murrin Murrin, Western Australia, March 2011

- TR18. Lewis, A.E., 2011. Chalcopyrite, research project review, Anglo American, Gauteng, February 2011
- TR19. Lewis, A.E., 2011. Thermodynamic modelling for process feasibility of Eutectic Freeze Crystallization, Proxa SA Pty Ltd., Western Cape, February 2011
- TR20. Lewis, A.E., 2010. Kinetics of selenium reduction and precipitation, Anglo Platinum, Gauteng, December 2010
- TR21. Lewis, A.E. and Paradza, N., 2010. Solids suspension, attrition and breakage in the nickel reduction autoclave including an update on CFD, Murrin Murrin, Western Australia, December 2010
- TR22. Lewis, A.E., Nathoo, J. and Randall, D., 2010. Development of Eutectic Freeze Crystallization technology for water and salt recovery from hypersaline brine, Anglo Coal, Gauteng, September 2010
- TR23. Lewis, A.E., 2010. Boiling point elevation and basic crystallizer design, Three progress reports, Anglo Platinum, Gauteng, September 2010
- TR24. Lewis, A.E., 2010. Summary Report, Manganese Metal Company, Mpumalanga, January 2010
- TR25. Lewis, A.E., 2009c. Nickel reduction research project Part 3: SEM images & fundamental studies, Murrin Murrin, Western Australia, December 2009
- TR26. Lewis, A.E., 2009b. Plant trials March 2009. Part 2: Solids suspension and attrition, Murrin Murrin, Western Australia, September 2009
- TR27. Lewis, A.E., 2009a. Plant trials March 2009. Effects of different additives on particle size and morphology, Murrin Murrin, Western Australia, May 2009
- TR28. Ramaru, R., Nathoo, J. and Lewis, A.E., 2009. Phosphate precipitation from Tshwane Municipality waste water, SSI, Gauteng, October 2009
- TR29. Lewis, A.E. and Nathoo, J., 2009. Eutectic Freeze Crystallization, University of Western Cape for Coaltech collaboration, Western Cape, October 2009
- TR30. Lewis, A.E., 2009. Analysis and comparison of crystalline pharmaceutical products, Fine Chemicals Corporation, Western Cape, October 2009
- TR31. Lewis, A.E. and Nathoo, J., 2009. Eutectic Freeze Crystallization for salt purification, Impala Platinum, Gauteng, July 2009
- TR32. Lewis, A.E., 2009. Eutectic Freeze Crystallization for water and salt recovery from concentrated brine, Emalahleni Water Reclamation Plant, Anglo Coal, Gauteng, July 2009
- TR33. Lewis, A.E., 2009. Feedback on Plant Trials March 2009, Effect of different additives on particle size and morphology, Murrin Murrin, Western Australia, May 2009
- TR34. Lewis, A.E. and Nathoo, J., 2009. Eutectic Freeze Crystallization for salt purification, Impala Platinum, Part 2, Gauteng, May 2009
- TR35. Chiang, Y., Nathoo, J. and Lewis, A.E., 2009. Alcoa AU, Australia, May 2009
- TR36. Lewis, A.E. and Nathoo, J., 2009. Eutectic Freeze Crystallization, University of Western Cape for Coaltech collaboration, Western Cape, October 2009
- TR37. Mbedzi, N., Nathoo, J. and Lewis, A.E., 2008. Sasol Technologies, Gauteng July 2008
- TR38. Chiang, Y., Nathoo, J. and Lewis, A.E., 2008. Alcoa AU, Australia, June 2008
- TR39. Petrik, L.F., Lewis, A.E., Hendry B.A., Randall, D.G., Balfour, G., Yalala, Z.G.B., Musyoka, N. and Barnard, B., 2008. Brine treatment and disposal, Coaltech 2020, Gauteng, October 2008
- TR40. Mangere, M., Nathoo, J. and Lewis, A.E., 2008. Continuous precipitation using the replication model system: selenium precipitation from acidic copper sulphate solution, Anglo Platinum, Gauteng, September 2008
- TR41. Petrik, L.F., Lewis, A.E., Hendry B.A., Reddy, S.T., Balfour, G., Yalala, Z.G.B., Musyoka, N. and Barnard, B., 2008. Brine treatment and disposal, Coaltech 2020, Gauteng, August 2008
- TR42. Lewis, A.E., Nathoo, J. and Ramaru, R., 2008. Phosphate precipitation from Tswane Municipality, SSI, Gauteng, July 2008
- TR43. Petrik, L.F., Lewis, A.E., Hendry B.A., Reddy, S.T., Balfour, G., Yalala, Z.G.B. and Musyoka, N., 2008. Brine treatment and disposal, Coaltech 2020, Gauteng, June 2008
- TR44. Mangere, M., Nathoo, J. and Lewis, A.E., 2008. Continuous precipitation using the replication model system: selenium precipitation from acidic copper sulphate solution, Anglo Platinum, Gauteng, May 2008
- TR45. Lewis, A.E., Nathoo, J. and Govan, P., 2007. Part 2 on measurement and modelling of solubility data for the Anglo-Zn process, Anglo American Research Laboratories, Gauteng, January 2008

- TR46. Lewis, A.E., 2007. Aqueous chemistry modelling of the scaling potential of gas liquor, Sasol Technology Pty Ltd, Gauteng, December 2007
- TR47. Lewis, A.E., Nathoo, J. and Govan, P., 2007. Part 1 on measurement and modelling of solubility data for the Anglo-Zn process, Anglo American Research Laboratories, Gauteng, December 2007
- TR48. Nathoo, J. and Lewis, A.E., 2007. Evaluation of BASF Selexsorb Alumina for the removal of contaminants from gas liquor in continuous mode, Sasol Technology, Gauteng, December 2007
- TR49. Petrik, L.F., Lewis, A.E., Hendry B.A., Randall, D.G., Balfour, G. and Yalala, Z.G.B., 2008. Brine treatment and disposal, Coaltech 2020, Gauteng, December 2007
- TR50. Lewis, A.E. and Reddy, S., 2006. Project progress report, Coaltech 2020, Gauteng, November 2007
- TR51. Nathoo, J. and Lewis, A.E., 2007. Phase 2 Part 2 on investigating the removal of contaminants from the gas liquor (GL) using alumina in continuous mode, report three, Sasol Technology, Gauteng, October 2007
- TR52. Nathoo, J. and Lewis, A.E., 2007. Phase 2 Part 2 on investigating the removal of contaminants from the gas liquor (GL) using alumina in continuous mode, report two, Sasol Technology, Gauteng, October 2007
- TR53. Lewis, A.E. and Nathoo, J., 2007. Part 1b on acid generation by precipitation in the regenerative atmospheric leach process, Anglo American Research Laboratories, Gauteng, September 2007
- TR54. Nathoo, J. and Lewis, A.E., 2007. Phase 2 Part 2 on preliminary results: Investigating the removal of contaminants from the gas liquor (GL) using alumina in continuous mode, Sasol Technology, Gauteng, August 2007
- TR55. Petrik, L.F., Lewis, A.E., Hendry B.A., Reddy, S.T., Balfour, G., Mishra, V.K. and Vadapalli, V.R.K., 2007. Brine treatment and disposal, Coaltech 2020, Gauteng, August 2007
- TR56. Nathoo, J. and Lewis, A.E., 2007. Phase 2 on preliminary results pertaining to the feasibility of using silica gel, Sasol Technology, Gauteng, June 2007
- TR57. Nathoo, J. and Lewis, A.E., 2007. Phase 2 Part 2 on investigating the removal of contaminants from the gas liquor (GL) using alumina in continuous mode, report one, Sasol Technology, Gauteng, June 2007
- TR58. Nathoo, J. and Lewis, A.E., 2007. Phase 2 on preliminary results pertaining to the feasibility of using silica gel, Sasol Technology, Gauteng, June 2007
- TR59. Petrik, L.F., Lewis, A.E., Hendry B.A., Reddy, S.T., Mishra, V.K. and Vadapalli, V.R.K., 2007. Brine treatment and disposal, Coaltech 2020, Gauteng, April 2007
- TR60. Lewis, A.E. and Nathoo, J., 2007. Particle analysis and mathematical description of mini plant crystal product, Anglo American Research Laboratories, Gauteng, January 2007
- TR61. Lewis, A.E. and Nathoo, J., 2006. Contaminant removal from gas liquor using hydrometal-lurgical methods, Sasol Technology Pty Ltd, Gauteng, December 2006
- TR62. Lewis, A.E. and Reddy, S., 2006. Project progress report, Coaltech 2020, Gauteng, November 2006
- TR63. Lewis, A.E. and Nathoo, J., 2006. Particle analysis and mathematical description of mini plant crystal product, Anglo American Research Laboratories, Gauteng, October 2006
- TR64. Lewis, A.E. and Nathoo, J., 2006. Characterisation of precipitation of magnesium hydroxide from brine, report and DvD, Industrial and Petrochemical Consultants (Pty) Ltd, Western Cape, August 2006
- TR65. Lewis, A.E. and Nathoo, J., 2006. Contaminant removal from gas liquor using hydrometal-lurgical methods, report one, Sasol Technology Pty Ltd, Gauteng, July 2006
- TR66. Lewis, A.E., 2006. NaSCN removal, specialist process development review, Sasol Technology Pty Ltd., Gauteng, June 2006
- TR67. Lewis, A.E. and Nathoo, J., 2006. Contaminant removal from gas liquor using hydrometal-lurgical methods, Sasol Technology Pty Ltd., Gauteng, March 2006
- TR68. Lewis, A.E. and Nathoo, J., 2005. Phases 1 and 2 on measurement and modelling of solubility data, Anglo American Research Laboratories, Gauteng, December 2005
- TR69. Lewis, A.E., 2005. Metal precipitation in mine water treatment by sulphate reduction, Water Research Commission, Gauteng, November 2005
- TR70. Lewis, A.E. and Nathoo, J., 2005. Measurement and modelling of solubility data, Anglo American Research Laboratories, Gauteng, November 2005
- TR71. Lewis, A.E. and Nathoo, J., 2005. Manganese purification process re-engineering, Manganese Metal Company, Mpumalanga, November 2005

- TR72. Lewis, A.E., 2005. Analysis of V2O5 crystalline product: Current and new production, Highveld Steel and Vanadium Corporation Limited, Gauteng, August 2005
- TR73. Lewis, A.E., 2005. Aqueous chemistry simulation for raw gas liquor, Sasol Technology Pty Ltd, Gauteng, August 2005
- TR74. Lewis, A.E. and Ntuli, F., 2005. An investigation into the crystallization behaviour of nickel through reduction by hydrogen – Phase 3, Impala Platinum, Gauteng, May 2005
- TR75. Lewis, A.E., 2004. Antisolvent crystallization preliminary process review and analysis, Somchem, Western Cape, October 2004
- TR76. Lewis, A.E., Taty Costodes, V.C., Ntuli, F. and Nathoo, J., 2004. An investigation into the crystallization behaviour of nickel through reduction with hydrogen – Phase 3, Impala Platinum, Gauteng, October 2004
- TR77. Lewis, A.E., 2004. An investigation into the crystallization behaviour of nickel through reduction with hydrogen - Phase 3, Impala Platinum, Gauteng, March 2004
- TR78. Lewis, A.E. and Hounslow, M. J., 2003. Development and testing of phenomenological models and solution algorithms: Verification of a model for a well-mixed compartment for the Crystallisation Research Tool, report four, US Department of Energy Crystallisation Project Team Technical, United State of America, December 2003
- TR79. Lewis, A.E. and Hounslow, M.J., 2003. Development and testing of phenomenological models and solution algorithms: Development and implementation of a model for a well-mixed compartment for the Crystallisation Research Tool, report three, US Department of Energy Crystallisation Project Team Technical, United States of America, December 2003
- TR80. Lewis, A.E., 2002. An investigation into the crystallization behaviour of nickel through reduction with hydrogen - Phase 2, Impala Platinum, Gauteng, December 2002
- TR81. Lewis, A.E. and van Hille, R.P., 2002. Recovery of sodium bicarbonate from brine using carbon dioxide, Anglo Platinum, Gauteng, November 2002
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