



## PAPERS IN REFEREED JOURNALS

1. Van Jaarsveld, J.G.S., Van Deventer, J.S.J. and Lorenzen, L., "The potential use of geopolymeric materials to immobilise toxic metals: Part I. Theory and applications", *Minerals Engineering*, vol. 10, no.7, 1997, pp. 659-669.
2. Van Jaarsveld, J.G.S., Van Deventer, J.S.J. & Lorenzen, L., "Factors affecting the immobilization of metals in geopolymerized fly ash", *Metallurgical and Materials Transactions B*, vol. 29B, 1998, pp. 283-291.
3. Van Jaarsveld, J.G.S., Van Deventer, J.S.J. and Schwartzman, A., "The potential use of geopolymeric materials to immobilise toxic metals: Part II. Material and leaching characteristics", *Minerals Engineering*, vol. 12, no. 1, 1999, pp. 75-91.
4. Van Jaarsveld, J.G.S. & Van Deventer, J.S.J., "The effect of metal contaminants on the formation and properties of waste-based geopolymers", *Cement and Concrete Research*, vol. 29, no. 8, 1999, pp. 1189-1200.
5. Van Jaarsveld, J.G.S. & Van Deventer, J.S.J., "Effect of the alkali metal activator on the properties of fly-ash-based geopolymers", *Industrial & Engineering Chemistry Research*, vol. 38, no. 10, 1999, pp. 3932-3941.
6. Xu, H. & Van Deventer, J.S.J., "Ab initio calculations on the five-membered alumino-silicate framework rings model: Implications for dissolution in alkaline solutions", *Computers and Chemistry*, vol. 24, nos. 3-4, 2000, pp. 391-404.
7. Xu, H. & Van Deventer, J.S.J., "The geopolymerisation of alumino-silicate minerals", *International Journal of Mineral Processing*, vol. 59, 2000, pp. 247-266.
8. Phair, J.W., Van Deventer, J.S.J. & Smith, J.D., "Mechanism of polysialation in the incorporation of zirconia into fly ash-based geopolymers", *Industrial & Engineering Chemistry Research*, vol. 39, no. 8, 2000, pp. 2925-2934.
9. Phair, J.W. & Van Deventer, J.S.J., "Effect of silicate activator pH on the leaching and material characteristics of waste-based inorganic polymers", *Minerals Engineering*, vol. 14, no. 3, 2001, pp. 289-304.
10. Phair, J.W., Van Deventer, J.S.J. & Smith, J.D., "Interaction of sodium silicate with zirconia and its consequences for polysialation", *Colloids and Surfaces A*, vol. 182, no. 1-3, 2001, pp. 143-159.
11. Xu, H., Van Deventer, J.S.J. & Lukey, G.C., "Effect of alkali metals on the preferential geopolymerization of stilbite/kaolinite mixtures", *Industrial & Engineering Chemistry Research*, vol. 40, 2001, pp. 3749-3756.
12. Xu, H. & Van Deventer, J.S.J., "Geopolymerisation of aluminosilicates: Relevance to the minerals industry," *AusIMM Bulletin*, no. 1, Jan./Feb, 2002.
13. Lee, W.K.W. & Van Deventer, J.S.J., "The effect of ionic contaminants on the early-age properties of alkali-activated fly ash-based cements", *Cement and Concrete Research*, vol. 32, 2002, pp. 577-584.
14. Phair, J.W. & Van Deventer, J.S.J., "Effect of silicate activator pH on the microstructural characteristics of waste-based geopolymers", *International Journal of Mineral Processing*, vol. 66, nos. 1-4, 2002, pp. 121-143.



15. Phair, J.W. & Van Deventer, J.S.J., "Characterization of fly-ash-based geopolymeric binders activated with sodium aluminate", *Industrial & Engineering Chemistry Research*, vol. 41, no. 17, 2002, pp. 4242-4251.
16. Lee, W.K.W. & Van Deventer, J.S.J., "Effects of anions on the formation of aluminosilicate gel in geopolymers", *Industrial & Engineering Chemistry Research*, vol. 41, no. 18, 2002, pp. 4550-4558.
17. Xu, H. & Van Deventer, J.S.J., "Factors affecting the geopolymerization of alkali-feldspars", *Minerals and Metallurgical Processing*, vol. 19, no. 4, 2002, pp. 209-214.
18. Xu, H. & Van Deventer, J.S.J., "Microstructural characterisation of geopolymers synthesised from kaolinite/stillbite mixtures using XRD, MAS-NMR, TEM/EDX and HREM", *Cement and Concrete Research*, vol. 32, no. 11, 2002, pp. 1705-1716.
19. Van Jaarsveld, J.G.S., Van Deventer, J.S.J. & Lukey, G.C., "The effect of composition and temperature on the properties of fly ash- and kaolinite-based geopolymers", *The Chemical Engineering Journal*, vol. 89, nos. 1-3, 2002, pp. 63-73.
20. Lee, W.K.W. & Van Deventer, J.S.J., "Structural reorganisation of class F fly ash in alkaline silicate solutions", *Colloids and Surfaces A*, vol. 211, no. 1, 2002, pp. 49-66.
21. Lee, W.K.W. & Van Deventer, J.S.J., "The effects of inorganic salt contamination on the strength and durability of geopolymers", *Colloids and Surfaces A*, vol. 211, nos. 2-3, 2002, pp. 115-126.
22. Xu, H. & Van Deventer, J.S.J., "Geopolymerisation of multiple minerals", *Minerals Engineering*, vol. 15, no. 12, 2002, pp. 1131-1139.
23. Van Jaarsveld, J.G.S., Van Deventer, J.S.J. & Lukey, G.C., "The characterisation of source materials in fly ash based geopolymers", *Materials Letters*, vol. 57, 2003, pp. 1272-1280.
24. Xu, H. & Van Deventer, J.S.J., "Effect of source materials on geopolymerization", *Industrial & Engineering Chemistry Research*, vol. 42, 2003, pp. 1698-1706.
25. Phair, J.W., Smith, J.D. & Van Deventer, J.S.J., "Characteristics of aluminosilicate hydrogels related to commercial 'Geopolymers'", *Materials Letters*, vol. 57, no. 28, 2003, pp. 4356-4367.
26. Yip, C.K. & Van Deventer, J.S.J., "Microanalysis of calcium silicate hydrate gel formed within a geopolymeric binder", *Journal of Materials Science*, vol. 38, no.18, 2003, pp. 3851-3860.
27. Lee, W.K.W. & Van Deventer, J.S.J., "The use of infrared spectroscopy to study geopolymerization of heterogeneous amorphous aluminosilicates", *Langmuir*, vol. 19, no. 21, 2003, pp. 8726-8734.
28. Lee, W.K.W. & Van Deventer, J.S.J., "The interface between natural siliceous aggregates and geopolymers", *Cement and Concrete Research*, vol. 34, no. 2, 2004, pp. 195-206.
29. Xu, H., Van Deventer, J.S.J., Roszak, S. & Leszczynski, J., "Ab Initio study of dissolution reactions of five-membered aluminosilicate framework rings", *International Journal of Quantum Chemistry*, vol. 96, no.4, 2004, pp. 365-373.



30. Feng, D., Tan, H. & Van Deventer, J.S.J., "Ultrasound enhanced geopolymerisation," *Journal of Materials Science*, vol. 39, no.2, 2004, pp. 571-580.
31. Goretta, K.C., Chen, N., Gutierrez-Mora, F., Routbort, J.L., Lukey, G.C. & Van Deventer, J.S.J., "Solid-particle erosion of a geopolymer containing fly ash and blast-furnace slag," *Wear*, vol. 256, 2004, pp. 714-719.
32. Van Jaarsveld, J.G.S., Van Deventer, J.S.J. & Lukey, G.C., "A comparative study of kaolinite versus metakaolinite in fly ash based geopolymers containing immobilised metals," *Chemical Engineering Communications*, vol. 191, no. 4, 2004, pp. 531-549.
33. Phair, J.W., Van Deventer, J.S.J. & Smith, J.D., "Effect of Al source and alkali activation on Pb and Cu immobilisation in fly-ash based 'geopolymers,'" *Applied Geochemistry*, vol. 19, no. 3, 2004, pp. 423-434.
34. Duxson, P., Lukey, G.C., Separovic, F. & Van Deventer, J.S.J., "Effect of alkali cations on aluminum incorporation in geopolymeric gels," *Industrial & Engineering Chemistry Research*, vol. 44, no. 4, 2005, pp. 832-839.
35. Duxson, P., Provis, J.L., Lukey, G.C., Separovic, F. & Van Deventer, J.S.J., "<sup>29</sup>Si NMR study of structural ordering in aluminosilicate geopolymer gels," *Langmuir*, vol. 21, no. 7, 2005, pp. 3028-3036.
36. Provis, J.L., Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "A statistical thermodynamic model for Si/Al ordering in amorphous aluminosilicates," *Chemistry of Materials*, vol. 17, no. 11, 2005, pp. 2976-2986.
37. Provis, J.L., Lukey, G.C. & Van Deventer, J.S.J., "Do geopolymers actually contain nanocrystalline zeolites? – A re-examination of existing results," *Chemistry of Materials*, vol. 17, no. 12, 2005, pp. 3075-3085. [Review article and cover graphic]
38. Provis, J.L., Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "The role of mathematical modelling and gel chemistry in advancing geopolymer technology," *Chemical Engineering Research and Design*, vol. 83, no. A7, 2005, pp. 853-860 [invited paper].
39. Duxson, P., Provis, J.L., Lukey, G.C., Mallicoat, S.W., Kriven, W.M. & Van Deventer, J.S.J., "Understanding the relationship between geopolymer composition, microstructure and mechanical properties," *Colloids and Surfaces A*, vol. 269, nos.1-3, 2005, pp. 47-58.
40. Provis, J.L., Duxson, P., Lukey, G.C., Separovic, F., Kriven, W.M. & Van Deventer, J.S.J., "Modeling speciation in highly concentrated alkaline silicate solutions," *Industrial & Engineering Chemistry Research*, vol. 44, no. 23, 2005, pp. 8899-8908.
41. Yip, C.K. & Van Deventer, J.S.J., "The coexistence of geopolymeric gel and calcium silicate hydrate at the early stage of alkaline activation," *Cement and Concrete Research*, vol. 35, no. 9, 2005, pp. 1688-1697.
42. Sindhunata, Van Deventer, J.S.J., Lukey, G.C. & Xu, H., "Effect of curing temperature and silicate concentration on fly-ash-based geopolymerization," *Industrial & Engineering Chemistry Research*, vol. 45, no. 10, 2006, pp. 3559-3568.
43. Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "Thermal conductivity of metakaolin geopolymers used as a first approximation for determining gel interconnectivity," *Industrial & Engineering Chemistry Research*, vol. 45, no. 23,



44. Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "Thermal evolution of metakaolin geopolymers: Part 1 – Physical evolution," *Journal of Non-Crystalline Solids*, vol. 352, nos. 52-54, 2006, pp. 5541-5555.
45. Duxson, P., Provis, J.L., Lukey, G.C., Van Deventer, J.S.J., Separovic, F. & Gan, Z.H., "39K NMR of free potassium in geopolymers," *Industrial & Engineering Chemistry Research*, vol. 45, no.26, 2006, pp. 9208-9210.
46. Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "Evolution of gel structure during thermal processing of Na-geopolymer gels," *Langmuir*, vol. 22, no. 21, 2007, pp. 8750-8757.
47. Duxson, P., Mallicoat, S.W., Lukey, G.C., Kriven, W.M. & Van Deventer, J.S.J., "The effect of alkali and Si/Al ratio on the development of mechanical properties of metakaolin-based geopolymers," *Colloids and Surfaces A*, vol. 292, no. 1, 2007, pp. 8-20.
48. Van Deventer, J.S.J., Provis, J.L., Duxson, P. & Lukey, G.C., "Reaction mechanisms in the geopolymeric conversion of inorganic waste to useful products," *Journal of Hazardous Materials*, vol. 139, no. 3, 2007, pp. 506-513. [invited paper based on plenary talk]
49. Sofi, M., Van Deventer, J.S.J., Mendis, P. & Lukey, G.C., "Engineering properties of inorganic polymer concretes (IPCs)," *Cement and Concrete Research*, vol. 37, no. 2, 2007, pp. 251-257.
50. Provis, J.L. & Van Deventer, J.S.J., "In-situ energy dispersive X-ray diffractometry - A direct measure of the kinetics of geopolymerisation," *Journal of Materials Science*, in press 2007.
51. Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "Characteristics of thermal shrinkage and weight loss in Na-geopolymers derived from metakaolin," *Journal of Materials Science*, in press 2007.
52. Sofi, M., Van Deventer, J.S.J., Mendis, P. & Lukey, G.C., "Bond performance of reinforcing bars in inorganic polymer concrete (IPC)," *Journal of Materials Science*, in press 2007.
53. Goretta, K.C., Gutierrez-Mora, F., Singh, J.P., Routbort, J.L., Lukey, G.C. & Van Deventer, J.S.J., "Erosion of geopolymers made from industrial waste," *Journal of Materials Science*, in press 2007.
54. Duxson, P., Fernández-Jiménez, A., Provis, J.L., Lukey, G.C., Palomo, A. and Van Deventer, J.S.J, "Geopolymer technology: The current state of the art," *Journal of Materials Science*, in press 2007.
55. Provis, J.L. & Van Deventer, J.S.J., "Geopolymerisation kinetics. 1. In situ energy dispersive X-ray diffractometry," *Chemical Engineering Science*, in press 2007.
56. Provis, J.L. & Van Deventer, J.S.J., "Geopolymerisation kinetics. 2. Reaction kinetic modelling," *Chemical Engineering Science*, in press 2007.
57. Yong, S.L., Feng, D., Lukey, G.C. & Van Deventer, J.S.J., "Chemical characterisation of the steel-geopolymeric gel interface," *Colloids and Surfaces A*, in press 2007.



58. Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "The thermal evolution of metakaolin geopolymers: Part 2 – Phase stability and structural development," *Journal of Non-Crystalline Solids*, in press 2007.
59. Lee, W.K.W. & Van Deventer, J.S.J., "Chemical interactions between siliceous aggregates and low-Ca alkali-activated cements," *Cement and Concrete Research*, in press 2007.

#### **INVITED CHAPTERS IN TEXTBOOKS**

1. Van Deventer, J.S.J. & Xu, H., "Geopolymerisation of mineral products and waste," *MINERAL PROCESSING AND ENGINEERING*, Editors: V.N. Misra, G.D. Yadav & K.S. Rao, Indian Institute of Chemical Engineers, Kolkata, India, 2003, pp. 207-215.
2. Lukey, G.C., Mendis, P., Van Deventer, J.S.J. & Sofi, M., "Advances in inorganic polymer concrete technology," Chapter 10, *CONCRETE MIX DESIGN, QUALITY CONTROL AND SPECIFICATION*, Routledge, 3rd Edition, ISBN 0415393132, Editor: K.W. Day, October 2006.

#### **REFEREED PAPERS IN CONFERENCE PROCEEDINGS**

1. Van Jaarsveld, J.G.S., Van Deventer, J.S.J. & Lorenzen, L., "Immobilisation of toxic metals in geopolymers" *Proceedings of Chemeca 96: 24th Australian and New Zealand Chemical Engineering Conference*. Editor: G. Weiss, Vol. 4, pp. 45-50. [Sydney, Australia, 30 September to 2 October 1996].
2. Buckle, R.L., Lorenzen, L. & Van Deventer, J.S.J., "The stabilisation and disposal of jarosite," *Proceedings of the 2nd International Symposium on Iron Control in Hydrometallurgy*, Editors: J.E. Dutrizac & G.B. Harris, Metallurgical Society of the CIM, pp. 597-611. [Ottawa, Ontario, Canada, 20-23 October 1996].
3. Van Jaarsveld, J.G.S., Van Deventer, J.S.J. & Lorenzen, L., "Geopolymerisation: The potential use of alkali-activated binders for toxic metal containment," *Proceedings of Extraction Metallurgy Africa '97*, S.Afr. Inst. Min. Metall. [Johannesburg, South Africa, 25-26 June 1997].
4. Van Jaarsveld, J.G.S. & Van Deventer, J.S.J., "Geopolymerisation: A novel technique for treating mining and other industrial waste materials," *Proceedings of 2nd International Conference on Environmental Management (ICEM2)*, Environmental Management, vol. 2: Engineering the Water-Environment and Geo-Environment, Editors: M. Sivakumar & R.N. Chowdhury, Elsevier, Amsterdam, pp. 847-854. [Wollongong, Australia, 10-13 February 1998].
5. Van Jaarsveld, J.G.S. & Van Deventer, J.S.J., "The effect of metal contaminants on the formation and properties of waste based geopolymers," *Advances in Concrete, Engineering Foundation International Conference*, Editor: R.D. Hooton [Banff, Alberta, Canada, 5-10 July 1998]. {published as a Special Issue of *Cement and Concrete Research*, vol. 29, no. 8, 1999, pp. 1189-1200}.
6. Van Jaarsveld, J.G.S. & Van Deventer, J.S.J., "Solid-state characteristics of geopolymers synthesised from waste materials," *CD-ROM Proceedings of Chemeca '98*. [Port Douglas, Qld, Australia, 28-30 September 1998].
7. Van Jaarsveld, J.G.S. & Van Deventer, J.S.J., "The dependence of fly-ash based geopolymers on alkali metal activators," *CD-ROM Proceedings of Chemeca '99*. [Newcastle, Australia, 26-29 September 1999].



8. Lee, W.K.W. & Van Deventer, J.S.J., "The role of chemical additives in enhancing the properties of geopolymers", CD-ROM Proceedings of Chemeca '2000. [Perth, Australia, 9-12 July 2000].
9. Van Deventer, J.S.J., "The conversion of mineral waste to modern materials using geopolymerisation", MINPREX 2000 International Congress on Mineral Processing and Extractive Metallurgy, AusIMM, pp. 33-41. [Melbourne, Australia, 11-13 September 2000]. {Keynote presentation}
10. Lee, W.K.W. & Van Deventer, J.S.J., "The effect of ionic contaminants on the setting behaviour of geopolymeric gels", MINPREX 2000 International Congress on Mineral Processing and Extractive Metallurgy, AusIMM, pp. 357-362. [Melbourne, Australia, 11-13 September 2000].
11. Van Jaarsveld, J.G.S., G.C. Lukey, Van Deventer, J.S.J. & Graham, A., "The stabilisation of mine tailings by reactive geopolymerisation", MINPREX 2000 International Congress on Mineral Processing and Extractive Metallurgy, AusIMM, pp. 363-371. [Melbourne, Australia, 11-13 September 2000].
12. Gokhale, C., Lorenzen, L. & Van Deventer, J.S.J., "The immobilisation of organic waste by geopolymerisation", Proceedings of VI Southern Hemisphere Meeting on Minerals Technology, Vol. 2, pp. 626-631, Editors: J.P. Barbosa, A.B.J. Dutra, R. Melamed & R.deB.E. Trindade. [Rio de Janeiro, Brazil, 27 May – 01 June 2001].
13. Van Deventer, J.S.J., Lukey, G.C. & Van Jaarsveld, J.G.S., "The conversion and stabilization of alumino-silicate waste using geopolymerisation", 94th Annual Air and Waste Management Conference and Exhibition, CD-ROM. [Orlando, Florida, U.S.A., 24-28 June 2001].
14. Yip, C.K. & Van Deventer, J.S.J., "Effect of granulated blast furnace slag on geopolymerisation", CD-ROM Proceedings of the 6th World Congress of Chemical Engineering. [Melbourne, Australia, 23-27 September 2001].
15. Lee, W.K.W. & Van Deventer, J.S.J., "The addition of chemical additives to control the setting speed of geopolymeric binders", CD-ROM Proceedings of the 6th World Congress of Chemical Engineering. [Melbourne, Australia, 23-27 September 2001].
16. Yip, C. & Van Deventer, J.S.J., "Effect of mineralogy of calcium sources on geopolymerisation", CD-ROM Proceedings of 9th International Conference on Durability of Building Materials & Components [Brisbane, Australia, 17-20 March 2002].
17. Van Deventer, J.S.J., "The processing of inorganic polymers as new age construction materials", Proceedings of 2nd World Engineering Congress: Chemical & Process Engineering, Editors: Fakhru'l-Razi Ahmadun, Dayang Radiah Awang Biak & Intan Salwani, pp. 57-66. [Kuching, Sarawak, Malaysia, 22-25 July 2002] {Invited lecture}.
18. Goretta, K.C., Chen, N., Routbort, J.L., Lukey, G.C., Van Deventer, J.S.J., Van Jaarsveld, J.G.S. & Lloyd, R.R., "Erosion of a geopolymer derived from fly ash and granulated blast-furnace slag", CD Proceedings of Geopolymer 2002, ISBN 0-9750242-0-5, Editor: G.C. Lukey, 9p. [Softel, Melbourne, Australia, 28-29 October 2002].
19. Yip, C.K., Lukey, G.C. & Van Deventer, J.S.J., "Effect of blast furnace slag addition on microstructure and properties of metakaolinite geopolymeric materials", Proceedings of the 105th Annual Meeting of the American Ceramic Society, Ceramic Transactions, vol. 153 (Advances in Ceramic Matrix Composites IX), Editors: J.P. Singh, N.P. Bansal & W.M. Kriven, 2003, pp.187-209. [Gaylord Opryland, Nashville, Tennessee, U.S.A., 27-30 April 2003.] {Invited Lecture}



20. Yip, C.K., Lukey, G.C. & Van Deventer, J.S.J., "Microstructure and properties of slag/metakaolinite geopolymeric materials," CD-ROM Proceedings of 28th World Cement Conference - Our World in Concrete & Structures. [Singapore, 25-29 August 2003].
21. Isabella, C., Lukey, G.C., Xu, H. & Van Deventer, J.S.J., "The effect of aggregate size on packing structure and strength of geopolymeric concretes," CD-ROM Proceedings of European Congress on Advanced Materials and Processes (EUROMAT 2003). [Lausanne, Switzerland, 1-5 September 2003].
22. Isabella, C., Lukey, G.C., Xu, H. & Van Deventer, J.S.J., "The effect of aggregate particle size on formation of geopolymeric gel," CD-ROM Proceedings of International Conference on Advanced Materials for Construction of Bridges, Buildings and other Structures-III. [Davos, Switzerland, 7-12 September 2003].
23. Yip, C.K., Lukey, G.C. & Van Deventer, J.S.J., "The effect of gypsum plaster addition on the geopolymerisation of metakaolin," CD-ROM Proceedings of Cement and Concrete Science (Ed. R. Mangabhai). [Leeds, United Kingdom, 8-9 September 2003].
24. Xu, H., Lukey, G.C. & Van Deventer, J.S.J., "An ESEM study of the geopolymerisation of slag, flyash and metakaolinite," CD-ROM Proceedings of Cement and Concrete Science (Ed. R. Mangabhai). [Leeds, United Kingdom, 8-9 September 2003].
25. Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "Thermal stability of geopolymeric materials," CD-ROM Proceedings of 31st Australasian Chemical Engineering Conference (Chemeca). [Stamford-Plaza Hotel, Adelaide, Australia, 29 September - 1 October 2003].
26. Yip, C.K., Lukey, G.C. & Van Deventer, J.S.J., "The effect of calcium sulphate hemihydrate on the geopolymerisation of metakaolin," CD-ROM Proceedings of 31st Australasian Chemical Engineering Conference (Chemeca). [Stamford-Plaza Hotel, Adelaide, Australia, 29 September - 1 October 2003].
27. Gokhale, C., Lorenzen, L. & Van Deventer, J.S.J., "The immobilisation of organic waste by geopolymerisation," CD-ROM Proceedings of XXII International Mineral Processing Congress (IMPC). Editors: L. Lorenzen, D.J. Bradshaw, C. Aldrich, J.J. Eksteen, M. Wright & E. Thom, S. Afr. Inst. Min. Metall. [Cape Town, South Africa, 28 September - 3 October 2003].
28. Feng, D. & Van Deventer, J.S.J., "Ultrasound enhanced reactions at solid-liquid interfaces," CD-ROM Proceedings of XXII International Mineral Processing Congress (IMPC). Editors: L. Lorenzen, D.J. Bradshaw, C. Aldrich, J.J. Eksteen, M. Wright & E. Thom, S. Afr. Inst. Min. Metall. [Cape Town, South Africa, 28 September - 3 October 2003].
29. Van Deventer, J.S.J. & Lukey, G.C., "Sustainability in the minerals industry: Threat or opportunity?" CD-ROM Proceedings of XXII International Mineral Processing Congress (IMPC). Editors: L. Lorenzen, D.J. Bradshaw, C. Aldrich, J.J. Eksteen, M. Wright & E. Thom, S. Afr. Inst. Min. Metall. Also hard copy, pp. 22-40. [Cape Town, South Africa, 28 September - 3 October 2003]. {Plenary Lecture}.
30. Lukey, G.C. & Van Deventer, J.S.J., "Drivers for the establishment of a geopolymer industry," CD-ROM Proceedings of Materials 2003. [UTS Haymarket Campus, Sydney, Australia, 1-3 October 2003]. {Keynote Lecture}.
31. Van Deventer, J.S.J., "Sustainability in the resource industries: "Implications for management, technology and education," Proceedings of International Seminar on Mineral Processing Technology (MPT-2004). Editors: G.V. Rao & V.N. Misra, Allied Publishers Private Ltd, New Delhi, 2004, pp. 3-10. [Bhubaneswar, Orissa, India, 19-21 February 2004]. {Plenary Lecture}.



32. Provis, J.L., Van Deventer, J.S.J. & Lukey, G.C., "A conceptual model for solid-gel transformations in partially reacted geopolymeric systems," Proceedings of the 106th Annual Meeting of the American Ceramic Society, Ceramic Transactions, vol. 165 (Advances in Ceramic Matrix Composites X), Editors: J.P. Singh, N.P. Bansal & W.M. Kriven, 2004, pp. 49-70. [Marriott & Hyatt Regency Hotels, Indianapolis, Indiana, U.S.A., 18-21 April 2004]. {Invited Lecture}.
33. Duxson, P., Mallicoat, S.W., Lukey, G.C., Kriven, W.M. & Van Deventer, J.S.J., "Microstructural characterization of metakaolin-based geopolymers," Proceedings of the 106th Annual Meeting of the American Ceramic Society, Ceramic Transactions, vol. 165 (Advances in Ceramic Matrix Composites X), Editors: J.P. Singh, N.P. Bansal & W.M. Kriven, 2004, pp. 71-85. [Marriott & Hyatt Regency Hotels, Indianapolis, Indiana, U.S.A., 18-21 April 2004].
34. Xu, H., Lukey, G.C. & Van Deventer, J.S.J., "The activation of Class C-, Class F- fly ash and blast furnace slag using geopolymerisation," Proceedings of 8th CANMET/ACI International Conference on Fly Ash, Silica Fume, Slag and natural Pozzolans in Concrete. Editor: V. Mohan Malhotra, American Concrete Institute, pp. 797-819. [Treasure Island Hotel, Las Vegas, CA, U.S.A., 23-29 May 2004].
35. Provis, J.L. & Van Deventer, J.S.J., "A mathematical model for geopolymerization," 3rd International Conference on Computational Modeling and Simulation of Materials III, Part B. (Advances in Science and Technology), Editors: P. Vincenzini & A. Lami, Techna Group, pp. 95-102 [Acireale (CT), Sicily, Italy, 30 May – 4 June 2004].
36. Provis, J.L. & Van Deventer, J.S.J., "Geopolymerisation – A mechanistic and mathematical model," CD Proceedings of Chemeca 2004. [Australian Technology Park, Sydney, 26-29 September 2004].
37. Rees, C., Lukey, G.C. & Van Deventer, J.S.J., "Characteristics of geopolymers derived from flyash and solid-silicate wastes," CD Proceedings of Chemeca 2004. [Australian Technology Park, Sydney, 26-29 September 2004].
38. Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "Nanostructural design of multifunctional geopolymeric materials," Proceedings of the 107th Annual Meeting of the American Ceramic Society, [Marriott Waterfront Hotel, Baltimore, U.S.A., 10-13 April 2005] {Invited Lecture}.
39. Provis, J.L., Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "Modeling Si-Al ordering in metakaolin-based geopolymers," Proceedings of the 107th Annual Meeting of the American Ceramic Society, [Marriott Waterfront Hotel, Baltimore, U.S.A., 10-13 April 2005].
40. Gutierrez-Mora, F., Dominguez-Rodriguez, A., Goretta, K.C., Singh, D., Routbort, J.L., Lukey, G.C. & Van Deventer, J.S.J., "High-temperature deformation of a geopolymer," Proceedings of the 107th Annual Meeting of the American Ceramic Society, [Marriott Waterfront Hotel, Baltimore, U.S.A., 10-13 April 2005] {Invited Lecture}.
41. Van Deventer, J.S.J., Lukey, G.C., Provis, J.L. & Duxson, P., "Reaction mechanisms in the geopolymeric conversion of inorganic waste to useful products," CD Proceedings of WasteEng2005 International Conference [Albi, France, 17-20 May 2005] {Keynote Lecture}.
42. Keyte, L.M., Lukey, G.C. & Van Deventer, J.S.J., "The effect of coal ash glass chemistry on the tailored design of waste-based geopolymeric products," CD Proceedings of WasteEng2005 International Conference [Albi, France, 17-20 May 2005].





43. Lloyd, R.R. & Van Deventer, J.S.J., "The microstructure of geopolymers synthesised from industrial waste," CD Proceedings of WasteEng2005 International Conference [Albi, France, 17-20 May 2005].
44. Provis, J.L., Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "Modelling chemical ordering in aluminosilicates and subsequent prediction of cation immobilisation efficiency," CD Proceedings of WasteEng2005 International Conference [Albi, France, 17-20 May 2005].
45. Duxson, P., Provis, J.L., Lukey, G.C. & Van Deventer, J.S.J., "Structural ordering in geopolymers derived from metakaolin" Geopolymer, Green Chemistry and Sustainable Development Solutions, Proceedings of the World Congress Geopolymer 2005, Editor: J. Davidovits, pp. 21-25. [Saint-Quentin, France, 28 June -1 July 2005].
46. Rees, C., Lukey, G.C. & Van Deventer, "The microstructural characterisation of geopolymers derived from fly ash and solid silicates," Geopolymer, Green Chemistry and Sustainable Development Solutions, Proceedings of the World Congress Geopolymer 2005, Editor: J. Davidovits, pp. 61-64. [Saint-Quentin, France, 28 June -1 July 2005].
47. Yong, S.L., Feng, D., Lukey, G.C., Van Deventer, J.S.J., "The effect of partially reacted surfaces on the short-range ordering of geopolymeric gels," Geopolymer, Green Chemistry and Sustainable Development Solutions, Proceedings of the World Congress Geopolymer 2005, Editor: J. Davidovits, pp. 75-78. [Saint-Quentin, France, 28 June -1 July 2005].
48. Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "The effect of alkali metal type and silicate concentration on the thermal stability of geopolymers," Geopolymer, Green Chemistry and Sustainable Development Solutions, Proceedings of the World Congress Geopolymer 2005, Editor: J. Davidovits, pp. 189-193. [Saint-Quentin, France, 28 June -1 July 2005].
49. Provis, J.L., Duxson, P., Lukey, G.C. & Van Deventer, J.S.J., "The role of mathematical modelling and gel chemistry in advancing geopolymer technology," CD Proceedings of 7th World Congress of Chemical Engineering [Glasgow, Scotland, 10-14 July 2005].
50. Van Deventer, J.S.J., Provis, J.L., Duxson, P. & Lukey, G.C., "Technological, environmental and commercial drivers for the use of geopolymers in a sustainable materials industry," Proceedings of Sohn International Symposium on Advanced Processing of Metals and Materials. Volume 3: Thermo and Physicochemical Principles: Special Materials and Aqueous and Electrochemical Processing, Editors: F. Kongoli & R.G. Reddy, The Minerals, Metals & Materials Society, Warrendale, Pennsylvania. [Catamaran Resort, San Diego, California, U.S.A., 27-31 August 2006]. {Keynote Lecture}.



## NON-REFEREED CONFERENCE PAPERS

1. Buckle, R.L., Lorenzen, L., Alberts, C. & Van Deventer, J.S.J., "Immobilisation techniques for various plant pollutants originating from industrial waste and other waste compounds", Proceedings of Minerals and Materials '96, Vol. I, pp. 373-381, S. Afr. Inst. Min. Metall., 1996. [Lord Charles Hotel, Somerset West, South Africa, 31 July -2 August 1996].
2. Van Jaarsveld, J.G.S., Van Deventer, J.S.J. & Lorenzen, L., "The potential use of geopolymeric materials to immobilise toxic metals", Minerals Engineering '96. [Sheraton Hotel, Brisbane, Australia, 26-28 August 1996].
3. Lorenzen, L., Jansen van Rensburg, A.E., Petersen, K.R.P. & Van Deventer, J.S.J., "The design of leaching tests to determine the effectiveness of heavy metal immobilisation in solid wastes", Proceedings of Wastecon '96 International Congress - Waste Management in Crisis, Vol. 1, pp. 521-531, The Institute of Waste Management, South Africa. [Durban, South Africa, 17-20 September 1996].
4. Hayward, N.J., Van Jaarsveld, J.G.S., Van Deventer, J.S.J. & Lorenzen, L., "The utilisation of waste materials in the immobilisation of solid and liquid waste by reactive polymerisation", Proceedings of Wastecon '96 International Congress - Waste Management in Crisis, Vol. 2, pp. 22-33, The Institute of Waste Management, South Africa. [Durban, South Africa, 17-20 September 1996].
5. Van Jaarsveld, J.G.S., Van Deventer, J.S.J. & Lorenzen, L., "Geopolymerisation: The conversion of solid toxic waste to safe construction materials",ACHEMA '97: International Meeting on Chemical Engineering and Biotechnology, DECHEMA. [Frankfurt am Main, Germany, 9-14 June 1997].
6. Van Deventer, J.S.J., Van Zyl, R.L., Lorenzen, L. & Van Jaarsveld, J.G.S., "The stabilization of jarosite in cementitious materials", Advances in Cement and Concrete, Engineering Foundation Conference. [Banff, Alberta, Canada, 5-10 July 1998].
7. Van Deventer, J.S.J., "Geopolymerisation," Manufesto '98 Exhibition and Conference. [Melbourne Convention Centre, Australia, 23-25 September 1998].
8. Van Jaarsveld, J.G.S. & Van Deventer, J.S.J., "The immobilisation and stabilisation of toxic waste using geopolymers", Oz-Tech '99. [Taipei, Taiwan, 5-7 April 1999]
9. Xu, H. & Van Deventer, J.S.J., "The geopolymerisation of natural alumino-silicates", Proceedings of the Second International Conference on Geopolymers. [Université de Picardie, Saint-Quentin, France, 30 June – 2 July 1999].
10. Van Jaarsveld, J.G.S. & Van Deventer, J.S.J., "The effect of metal contaminants on the microstructure of fly-ash based geopolymers", Proceedings of the Second International Conference on Geopolymers. [Université de Picardie, Saint-Quentin, France, 30 June – 2 July 1999].
11. Xu, H. & Van Deventer, J.S.J., "Ab initio calculations on the 5-membered alumino-silicate framework rings model: Implications for dissolution in alkaline solutions", Computers in Chemistry '99: 5th International Conference. [Szklarska Poreba, Poland, 1-6 July 1999].



12. Lee, W.K.W. Lee & Van Deventer, J.S.J., "Factors affecting the setting behaviour of fly ash based geopolymeric binders", 3rd Annual Australian Environmental Engineering Research Event. [Castlemaine, Victoria, Australia, 23-26 November 1999].
13. Phair, J.W., Van Deventer, J.S.J. & Smith, J.D., "The effect of aluminium source and alkali activation on lead immobilisation in geopolymers", 3rd Annual Australian Environmental Engineering Research Event. [Castlemaine, Victoria, Australia, 23-26 November 1999].
14. Xu, H. & Van Deventer, J.S.J., "The structural composition of amorphous alumino-silicates as determined by XRD, MAS-NMR, TEM and HREM", Microscopy & Microanalysis of Engineering Materials (MMEM2000), Monash University. [Clayton, Victoria, Australia, 14-17 February 2000].
15. Xu, H. & Van Deventer, J.S.J., "The effect of aqueous phase conditions on the geopolymerisation of feldspar", Hydromet 2000, Minerals Engineering International. [Adelaide, Australia, 3-5 April 2000].
16. Phair, J.W. & Van Deventer, J.S.J., "The effect of the degree of polymerisation of silicate on the immobilisation of heavy metals in geopolymers", Hydromet 2000, Minerals Engineering International. [Adelaide, Australia, 3-5 April 2000].
17. Phair, J.W. & Van Deventer, J.S.J., "The activation of geopolymeric binders with sodium aluminate", Advances in Cement and Concrete, United Engineering Foundation, New York. [Mt Tremblant, Quebec, Canada, 20-25 August 2000].
18. Lee, W.K.W. & Van Deventer, J.S.J., "Fracture toughness of the binder-aggregate interface in geopolymeric concrete", Advances in Cement and Concrete, United Engineering Foundation, New York. [Mt Tremblant, Quebec, Canada, 20-25 August 2000].
19. Gokhale, C., Lorenzen, L. & Van Deventer, J.S.J., "The immobilisation of organic waste by geopolymerisation", Mineral Processing 2000, S. Afr. Inst. Min. Metall. [Cape Town, South Africa, 24-25 August 2000].
20. Gokhale, C., Lorenzen, L. & Van Deventer, J.S.J., "The immobilisation of organic solid and liquid waste by reactive polymerisation", SAChE 2000 9th Annual Meeting. [Secunda, South Africa, 9-12 October 2000].
21. Phair, J.W. & Van Deventer, J.S.J., "The use of SANS,  $^{27}\text{Al}$  &  $^{29}\text{Si}$  NMR, DSC and XRD to describe the formation of alkali activated aluminosilicate binders", 3rd ANU Australian Small Angle and Surface Scattering Meeting, The Australian National University. [Canberra, Australia, 11-13 October 2000].
23. Van Deventer, J.S.J., "Geopolymerisation: The potential to convert alumino-silicate waste streams into commercial products", Enviro 2002 Convention [Melbourne, Australia, 7-12 April 2002].
24. Yip, C. & Van Deventer, J.S.J., "Microstructure of geopolymers", Materials Congress 2002 [London, United Kingdom, 9-11 April 2002].
25. Van Deventer, J.S.J., "Opportunities and obstacles in the commercialisation of geopolymers", CD Proceedings of Geopolymers 2002, ISBN 0-9750242-0-5 [Softel, Melbourne, Australia, 28-29 October 2002.] {Keynote Lecture}.



26. Xu, H. & Van Deventer, J.S.J., "Geopolymerisation of aluminosilicate minerals," CD Proceedings of Geopolymers 2002, ISBN 0-9750242-0-5 [Softel, Melbourne, Australia, 28-29 October 2002].
27. Lee, W.K.W. & Van Deventer, J.S.J., "Factors affecting the setting behaviour of fly ash-based geopolymeric binders," CD Proceedings of Geopolymers 2002, ISBN 0-9750242-0-5 [Softel, Melbourne, Australia, 28-29 October 2002].
28. Yip, C.K.B. & Van Deventer, J.S.J., "Roles of granulated blast furnace slag in geopolymerisation," CD Proceedings of Geopolymers 2002, ISBN 0-9750242-0-5 [Softel, Melbourne, Australia, 28-29 October 2002].
29. Sindhunata, Xu, H., Lukey, G.C. & Van Deventer, J.S.J., "The effect of curing conditions on the properties of geopolymeric materials derived from fly ash," Proceedings of Advances in Concrete through Science and Engineering. [Northwestern University, Evanston, IL, U.S.A, 21-24 March 2004].
30. Van Deventer, J.S.J & Lukey, G.C., "The development of sustainable practices in the resource industries: implications for key stakeholders," CD Proceedings of 1st International Conference on Advances in Mineral Resources Management and Environmental Geotechnology (AMIREG 2004), Editors: Z. Agioutantis and K. Komnitsas, Heliotos S.A. [Hania, Crete, Greece, 7-9 June 2004].
31. Lukey, G.C. & Van Deventer, J.S.J., "Geopolymer technology: the formation of cost-competitive construction materials from industrial waste streams," CD Proceedings of 1st International Conference on Advances in Mineral Resources Management and Environmental Geotechnology (AMIREG 2004), Editors: Z. Agioutantis and K. Komnitsas, Heliotos S.A. [Hania, Crete, Greece, 7-9 June 2004].
32. Van Deventer, J.S.J., "Is Australia ready to lead innovation in sustainable construction materials?" AASMIC Inaugural Conference, The Association for the Advancement of Sustainable Materials in Construction [Marriott Hotel, Melbourne, 18-19 November 2004]. {Keynote Lecture}.
33. Van Deventer, J.S.J & Lukey, G.C., "Research findings critical to the commercial adoption of geopolymers," International Ceramic Conference, Austceram 2004 [Carlton Crest Hotel, Melbourne, 29 November – 1 December 2004] {Invited Lecture}.
34. Keyte, L.M., Lukey, G.C. & Van Deventer, J.S.J., "The effect of coal ash composition on properties of waste-based geopolymers," Proceedings of International Symposium of Research Students on Mineral Science and Engineering, Indian Institute of Technology Madras [IIT Madras, Chennai, India, 20-22 December 2004].
35. Rees, C, Lukey, G.C. & Van Deventer, J.S.J., "The role of solid silicates on the formation of geopolymers derived from coal ash," Proceedings of International Symposium of Research Students on Mineral Science and Engineering, Indian Institute of Technology Madras [IIT Madras, Chennai, India, 20-22 December 2004].
36. Lukey, G.C. & Van Deventer, J.S.J., "Geopolymer technology: The formation of cost-competitive construction materials by the alkali-activation of coal ash," Proceedings of World of Coal Ash [Lexington, Kentucky, USA, 11-15 April 2005].
37. Keyte, L.M., Lukey, G.C. & Van Deventer, J.S.J., "The effect of coal ash glass chemistry on the tailor design of waste-based geopolymeric products," Proceedings of the World of Coal Ash [Lexington, KY, United States, 11-15 April 2005].



38. Goretta, K.C., Chen, N., Gutierrez-Mora, F., Routbort, J.L., Lukey, G.C. & Van Deventer, J.S.J., "Erosion of geopolymer composites," Proceedings of the 107th Annual Meeting of the American Ceramic Society, [Marriott Waterfront Hotel, Baltimore, Maryland, U.S.A., 10-13 April 2005].
39. Van Deventer, J.S.J., Lukey, G.C. & Provis, J.L., "The role of geopolymerisation in sustainable materials processing," Proceedings of John Floyd International Symposium on Sustainable Developments in Metals Processing, Editors: M. Nilmani & J.W. Rankin, pp. 435 to 446. [Melbourne, Australia, 3-6 July 2005.] {Invited Lecture}
40. Van Deventer, J.S.J., Duxson, P., Provis, J.L. & Lukey, G.C., "Recent progress in the development of geopolymer cements," Proceedings, International Forum on Waste Utilization in the Cement and Concrete Industries, China Building Materials Industry Association, and the World Business Council for Sustainable Development [China Resources Hotel, Beijing, China, 27-28 March 2006]. {Keynote Lecture}
41. Provis, J. L.; Duxson, P.; Lukey, G. C.; van Deventer, J. S. J. "Modeling geopolymer formation," Novel and Emerging Ceramics and Composites, Engineering Conferences International. [Outrigger Keauhou Beach Resort, Kona Coast, Hawaii, U.S.A., 25-30 June 2006]. {Invited Lecture}.
42. Duxson, P., Provis, J.L., Lukey, G.C. & Van Deventer, J.S.J. "The role of inorganic polymer technology in the development of 'Green concrete,'" Advances in Cement and Concrete X: Sustainability, Engineering Conferences International. [Davos, Switzerland, 2-7 July 2006]. {Keynote Lecture}.
43. Duxson, P., Provis, J.L., Lukey, G.C., Gan, Z.H., Separovic, F. & Van Deventer, J.S.J., "The structure and thermal evolution of geopolymers," Geopolymer Binders - Interdependence of Composition, Structure and Properties. [Bauhaus Univerität, Weimar, Germany, 18-19 September 2006]. {Invited Lecture}.
44. Muntingh, Y., Lorenzen, L., Lukey, G.C. & Van Deventer, J.S.J., "Utilization of fly ash based geopolymers as construction material," South African Chemical Engineering Congress, [International Convention Centre, Durban, South Africa, 20-22 September 2006].
45. Van Deventer, J.S.J., Provis, J.L., Duxson, P. & Lukey, G.C., "Drivers for the commercial adoption of geopolymeric concrete," 2006 Xi'an International Conference of Architecture and Technology: Architecture in Harmony, Xi'an University of Architecture and Technology [Xi'an, China, 23-25 September 2006] {Invited Lecture}.
46. Duxson, P., Provis, J.L., Lukey, G.C. & Van Deventer, J.S.J., "Factors affecting the thermal evolution of geopolymers at elevated temperatures," Materials Science & Technology 2006, [Duke Energy Center, Cincinnati, Ohio, U.S.A., 15-19 October 2006].
47. Provis, J.L., Duxson, P., Lukey, G.C., & Van Deventer, J.S.J., "Modeling the formation of geopolymers," CD-ROM Proceedings of the 2006 AIChE Annual Meeting, American Institute of Chemical Engineers, New York NY [San Francisco Hilton, San Francisco, CA, 12-17 November 2006].
48. Provis, J.L., Duxson, P., Van Deventer, J.S.J., "Geopolymers: Nanostructure, microstructure and performance," Proceedings of 31st International Cocoa Beach Conference on Advanced Ceramics and Composites, American Ceramic Society [Hilton, Daytona Beach, Florida, U.S.A., 21-26 January 2007].



49. Provis, J.L., Muntingh, Y., Lloyd, R.R., Xu, H., Duxson, P., Lorenzen, L., Krivenko, P.V. & Van Deventer, J.S.J., "Will geopolymers stand the test of time?" Proceedings of 31st International Cocoa Beach Conference on Advanced Ceramics and Composites, American Ceramic Society [Hilton, Daytona Beach, Florida, U.S.A., 21-26 January 2007] {Invited Lecture}.

#### **OTHER PRESENTATIONS**

1. "A side view on the hedging of stones Down Under", Australian Geomechanics Society: Victoria Group, Annual Dinner, Melbourne, Australia, 13 November 1996.
2. "Geopolymerisation: Ancient wisdom and new ideas", Inorganic Chemistry Seminar, The University of Melbourne, Australia, 11 August 1997.
3. "Geopolymers: Reinventing materials for beyond 2000", Department of Chemical Engineering, Monash University, Melbourne, Australia, 6 May 1999.
4. "Geopolymers: The rebirth of ancient materials for a high-tech millenium", Department of Chemical Engineering, The University of Melbourne, Australia, 26 August 1999.
5. "The commercialisation of process technology: Spending money, or making money?", Indian Descendent Engineers and Scientists Inc. - Australia, Melbourne, Australia, 20 June 2001.
6. "Green processing: Is it worthwhile?" Indian Institute of Science, Bangalore, India, 25 February 2004.
7. "Sustainability and the resource industries," President's Dinner, West Australian Mining Club, Perth, 1 July 2004.
8. "Green technology: Is it worth it?" Royal Society of Victoria, Melbourne, 9 September 2004.
9. "Geopolymers: Research and commercialisation," Australasian Ceramic Society meeting, Melbourne, Australia, 7 February 2007.