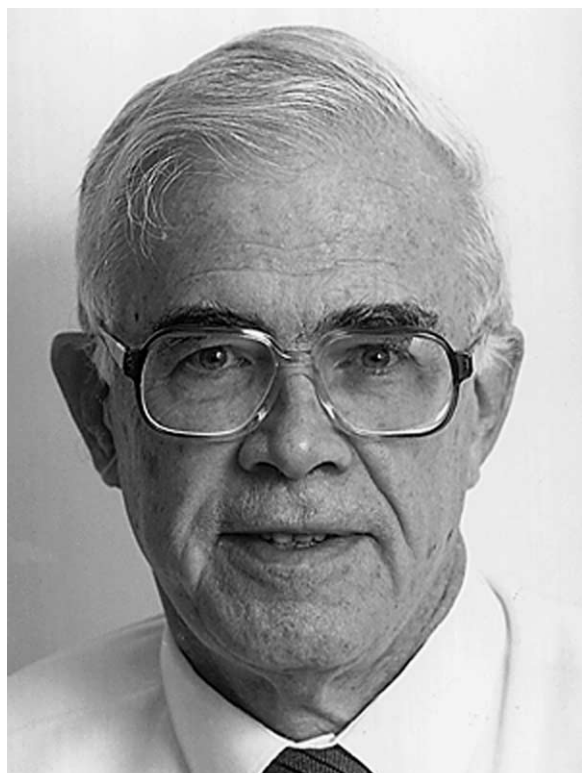


Biosketch

Michael Ewart Brown



Michael Ewart Brown

Michael Brown did his undergraduate studies at the University of Witwatersrand in Johannesburg, South Africa, before moving to Rhodes University, Grahamstown, where he did a Ph.D. in solid-state chemistry. After a year in the Chamber of Mines Research Laboratories in Johannesburg, he was appointed as a Lecturer at Rhodes University where he has remained and is currently Professor of Physical Chemistry.

He has spent periods of leave at the Queen's University of Belfast, the Cavendish Laboratory, Cambridge and ICI Explosives in Scotland. Much of Professor Brown's research has been done in collaboration with Dr. Andrew Galwey of the Queen's University of Belfast and they have recently published a book on Athermal Decomposition of Ionic Solids (Elsevier). Another area of interest has been in pyrotechnic chemistry with emphasis on the delay fuses used in the gold mining industry. Professor Brown was one of the founders of the Southern African Thermal Analysis Society and is currently Secretary of the International Confederation for Thermal Analysis and Calorimetry. He received the Mettler-NATAS Thermal Analysis Award in 1996 for his contributions to solid-state kinetics and pyrotechnics, the Rhodes University Vice-Chancellor's Senior Research Award in 1998, and the Gold Medal of the South African Chemical Institute in 2000.

Curriculum vitae

Michael Ewart Brown

Chemistry Department, Rhodes University,
Grahamstown 6140, South Africa

Present Post: Professor of Physical Chemistry

Personal details

Born: 12th July, 1938; Nationality: South African

Married with two adult children

Academic qualifications

B.Sc.(Hons) (Witwatersrand, First Class, 1960),

Ph.D. (Rhodes, 1966)

Professional qualifications

FRSSAf (Fellow of the Royal Society of SA),

MSA Chemical Institute

Career outline

Rhodes university

1962–1965: Junior Lecturer, 1967–1970: Lecturer

1971–1977: Senior Lecturer, 1978–1985:

Associate Professor

1986: Professor of Physical Chemistry

1966: Research Officer, SA Chamber of

Mines Research Laboratories

1971: Leverhulme Visiting Research Fellow at

Queen's University of Belfast

1980: Visiting Research Fellow, Cavendish

Laboratory, University of Cambridge

1989: Visiting Research Fellow, ICI Explosives,

Scotland

1989: Allied Irish Banks Visiting Professor,

Queen's University of Belfast

1986–1991: Dean of Science, Rhodes University

1994: Acting Dean of Research, Rhodes University

Research funding

Comprehensive funding from Foundation of Research and Development (FRD), 'B' category. Significant funding from AECI Explosives and Chemicals Ltd.

Awards

1996: Mettler/NATAS international award for distinguished contributions to Thermal Analysis

1998: Vice-Chancellor's Distinguished Senior Research Award, Rhodes University

2000: SA Chemical Institute Gold Medal

Invited lectures

1996: Mettler/NATAS Award Lecture at the 11th International Congress on Thermal Analysis and Calorimetry, Philadelphia

1998: Invited Lecturer at the 11th National Symposium of the Indian Thermal Analysis Society, Jammu, India

1998: Invited Lecturer at the 26th Symposium of the North American Thermal Analysis Society, Cleveland, Ohio

2000: Plenary Lecturer Eighth Conference on Calorimetry and Thermal Analysis, Zakopane, Poland

2000: Plenary Lecturer 28th North American Thermal Analysis Society Conference, Orlando, FL, USA

Organizations

Secretary of International Confederation of Thermal Analysis and Calorimetry, 1996

Editorial Board of "Thermochimica Acta"

Publications by Michael Ewart Brown (see also list of joint publications with Adrew K. Galwey)*Books*

- [1] Translation of Reactions in the Solid State into Russian; Chem. Abstr., 100 (1984) 105806.
- [2] M.E. Brown, Introduction to Thermal Analysis: Techniques and Applications, 2nd ed., Kluwer: Dodrecht, 2001.
- [3] Handbook of Thermal Analysis and Calorimetry, Vol. 1, Principles and Practice Elsevier Scientific, Amsterdam, 1998, 691 pp. M.E. Brown (Ed.) and contributor of two chapters: A.K. Galwey, M.E. Brown, Kinetic Background to Thermal Analysis and Calorimetry (77 pp.); V. Balek, M.E. Brown, Less-common Techniques (26 pp.).
- [4] Thermal Decomposition of Ionic Solids, co-authored with A.K. Galwey, Elsevier Scientific, Amsterdam, 1999, 597 pp.

Research papers

- [1] E.G. Prout, M.E. Brown, Thermal decomposition of irradiated nickel oxalate, American Society for Testing Materials, Spec. Tech. Publ. 359 (1964) 38–49.
- [2] E.G. Prout, M.E. Brown, X-ray scattering by irradiated single crystals of potassium permanganate, Nature 203 (1964) 398–399.
- [3] E.G. Prout, M.E. Brown, Thermal decomposition of irradiated calcium azide, Nature 205 (1965) 1314–1315.
- [4] M.E. Brown, B.V. Stewart, The thermal decomposition of ammonium metavanadate. I. The stoichiometry of the decomposition, J. Therm. Anal. 2 (1970) 287–299.
- [5] N.H. Agnew, M.E. Brown, The solid state polymerisation of vinylpyridine co-ordination compounds, J. Polym. Sci., A1 9 (1971) 2561–2574.
- [6] N.H. Agnew, M.E. Brown, Solid state reactions of vinylpyridine co-ordination compounds. II. J. Polym. Sci., Chem. Edn. 12 (1974) 1493–1503.
- [7] M.E. Brown, The thermal decomposition of lead citrate, J. Chem. Soc. Faraday I 69 (1973) 1202–1212.
- [8] M.E. Brown, L. Glasser, B.V. Stewart, The thermal decomposition of ammonium metavanadate. II. The kinetics and mechanism of the decomposition, J. Therm. Anal. 6 (1974) 529–541.
- [9] M.E. Brown, L. Glasser, B.V. Stewart, The thermal decomposition of ammonium metavanadate. III. A structural view of the mechanism of the decomposition, J. Therm. Anal. 7 (1975) 125–137.
- [10] M.E. Brown, L. Glasser, J. Larson, High temperature thermal properties of KH_2PO_4 : phase transitions and decompositions, Thermochim. Acta 30 (1979) 233–246.
- [11] M.E. Brown, C.P.J. van Vuuren, A. Lithauer, The thermal decomposition of bis(trispyrrolidino phosphine oxide) tetranitrate uranium(IV), Thermochim. Acta 49 (1981) 333–349.
- [12] M.E. Brown, G.M. Swallowe, The thermal decomposition of the silver(I) and mercury(II) salts of 5-nitrotetrazole and of mercury(II) fulminate, Thermochim. Acta 49 (1981) 247–258.

- [13] M.W. Beck, M.E. Brown, Thermal analysis of antimony/potassium permanganate pyrotechnic compositions, *Thermochim. Acta* 65 (1983) 197–212.
- [14] M.W. Beck, M.E. Brown, N.J.H. Heideman, Application of a probe technique for measuring the thermal conductivity of pyrotechnic compositions, *J. Phys. E* 17 (1984) 793–799.
- [15] M.E. Brown, K.C. Sole, M.W. Beck, Isothermal DSC study of the thermal decomposition of potassium permanganate, *Thermochim. Acta* 89 (1985) 27–37.
- [16] J.R. Moss, L.G. Scott, M.E. Brown, K.J. Hindson, A study of the complexes of $[-C_5H_5Fe(CO)_2]_2\{-(CH_2)_n\}$ (where $n = 3-12$) by mass spectroscopy and differential scanning calorimetry, *J. Organomet. Chem.* 282 (1985) 255–266.
- [17] M.W. Beck, M.E. Brown, Burning of antimony/potassium permanganate pyrotechnic compositions in closed systems, *Comb. Flame* 65 (1986) 263–271.
- [18] M.W. Beck, M.E. Brown, Modification of the burning rates of pyrotechnic compositions, *Comb. Flame* 66 (1986) 67–75.
- [19] J.H. Flynn, M.E. Brown, J. Sestak, Report on the workshop: current problems of kinetic data reliability evaluated by thermal analysis, *Thermochim. Acta* 110 (1987) 101–112.
- [20] M.E. Brown, Quantitative thermoanalytical studies of the kinetics and mechanisms of the thermal decompositions of inorganic solids, *Thermochim. Acta* 110 (1987) 153–158.
- [21] M.E. Brown, R.A. Rugunanan, A temperature-profile study of the combustion of black powder and its constituent mixtures, *Propell. Expl. Pyrotech.* 14 (1989) 69–75.
- [22] M.E. Brown, Thermal analysis of energetic materials, *Thermochim. Acta* 148 (1989) 521–531.
- [23] K.C. Sole, M.B. Mooiman, M.E. Brown, Oxidation kinetics of chromium(III) chloride, *J. Chem. Soc. Faraday Trans.* 86 (1990) 525–530.
- [24] M.W. Beck, M.E. Brown, Kinetic analysis of simulated DTA responses, *Thermochim. Acta* 164 (1990) 379–393.
- [25] M.W. Beck, M.E. Brown, Finite element simulation of the differential thermal analysis response to ignition of a pyrotechnic composition, *J. Chem. Soc. Faraday Trans.* 87 (1991) 711–715.
- [26] R.A. Rugunanan, M.E. Brown, Reactions of powdered silicon with some pyrotechnic oxidants, *J. Therm. Anal.* 37 (1991) 1193–1211.
- [27] R.A. Rugunanan, M.E. Brown, The use of pyrometry in the study of fast thermal processes involving initially solid samples, *J. Therm. Anal.* 37 (1991) 2125–2141.
- [28] R.L. Drennan, M.E. Brown, Binary and ternary pyrotechnic systems of Mn and/or Mo and BaO₂ and/or SrO₂. Part I. Thermal analysis, *Thermochim. Acta* 208 (1992) 201–221.
- [29] R.L. Drennan, M.E. Brown, Binary and ternary pyrotechnic systems of Mn and/or Mo and BaO₂ and/or SrO₂. Part II. Combustion studies, *Thermochim. Acta* 208 (1992) 223–246.
- [30] R.L. Drennan, M.E. Brown, Binary and ternary pyrotechnic systems of Mn and/or Mo and BaO₂ and/or SrO₂. Part III. Kinetic aspects, *Thermochim. Acta* 208 (1992) 247–259.
- [31] A. Coetzee, D.J. Eve, M.E. Brown, Thermal analysis of some mixed metal oxalates, *J. Therm. Anal.* 39 (1993) 947–973.
- [32] M.E. Brown, M.J. Tribelhorn, M.G. Blenkinsop, Use of thermomagnetometry in the study of iron-containing pyrotechnic systems, *J. Therm. Anal.* 40 (1993) 1123–1130.
- [33] A. Coetzee, M.E. Brown, D.J. Eve, C.A. Strydom, Kinetics of thermal decomposition of some mixed metal oxalates, *J. Therm. Anal.* 41 (1994) 357–385.
- [34] R.A. Rugunanan, M.E. Brown, Combustion of binary and ternary silicon/oxidant pyrotechnic systems. Part I. Fe₂O₃ and SnO₂ as oxidants, *Comb. Sci. Technol.* 95 (1994) 61–83.
- [35] R.A. Rugunanan, M.E. Brown, Combustion of binary and ternary silicon/oxidant pyrotechnic systems. Part II. Sb₂O₃ and KNO₃ as oxidants, *Comb. Sci. Technol.* 95 (1994) 85–99.
- [36] R.A. Rugunanan, M.E. Brown, Combustion of binary and ternary silicon/oxidant pyrotechnic systems. Part III. Ternary systems, *Comb. Sci. Technol.* 95 (1994) 101–115.
- [37] R.A. Rugunanan, M.E. Brown, Combustion of binary and ternary silicon/oxidant pyrotechnic systems. Part IV. Kinetic aspects, *Comb. Sci. Technol.* 95 (1994) 117–138.
- [38] M.E. Brown, T.T. Bhengu, D.K. Sanyal, Temperature calibration in thermogravimetry using energetic materials, *Thermochim. Acta* 244 (1994) 141–152.
- [39] M.J. Tribelhorn, M.E. Brown, Thermal decomposition of barium and strontium peroxides, *Thermochim. Acta* 255 (1995) 143–154.
- [40] M.J. Tribelhorn, M.E. Brown, Combustion of some iron-fuelled binary pyrotechnic systems, *Thermochim. Acta* 256 (1995) 291–307.
- [41] M.J. Tribelhorn, M.E. Brown, Combustion of some zinc-fuelled binary pyrotechnic systems, *Thermochim. Acta* 256 (1995) 309–324.
- [42] P.T. Kaye, M.J. Mphahlele, M.E. Brown, Benzodiazepine analogues. Part 9. Kinetics and mechanism of the azidotrimethylsilane-mediated Schmidt reaction on flavanones, *J. Chem. Soc. Perkin Trans.* 2 (1995) 835–838.
- [43] D.S. Venables, M.E. Brown, Reduction of tungsten oxides with carbon. Part I. Thermal analyses, *Thermochim. Acta* 282/283 (1996) 251–264.
- [44] D.S. Venables, M.E. Brown, Reduction of tungsten oxides with carbon. Part II. Tube furnace experiments, *Thermochim. Acta* 282/283 (1996) 265–276.
- [45] D.S. Venables, M.E. Brown, Reduction of tungsten oxides with hydrogen and with hydrogen and carbon, *Thermochim. Acta* 285 (1996) 361–382.
- [46] D.S. Venables, M.E. Brown, Reduction of tungsten oxides with carbon monoxide, *Thermochim. Acta* 291 (1997) 131–140.
- [47] M.E. Brown, Steps in a minefield—some kinetic aspects of thermal analysis, *J. Therm. Anal.* 49 (1997) 17–32.
- [48] J. Bacsa, D.J. Eve, M.E. Brown, The thermal dehydration and decomposition of Ba[Cu(C₂O₄)₂(H₂O)]5H₂O, *J. Therm. Anal.* 50 (1997) 33–50.
- [49] M.E. Brown, The Prout–Tompkins rate equation in solid state kinetics, *Thermochim. Acta* 300 (1997) 93–106.
- [50] L.A. Collett, M.E. Brown, Biochemical and biological applications of thermal analysis, *J. Therm. Anal.* 51 (1998) 693–726.

- [51] M.E. Brown, S.J. Taylor, M.J. Tribelhorn, Fuel-oxidant particle contact in binary pyrotechnic reactions, *Propell. Expl. Pyrotech.* 23 (1998) 320–327.
- [52] A.N. Nelwamondo, D.J. Eve, G.M. Watkins, M.E. Brown, Thermal and structural studies of amide complexes of transition metal(II) chlorides. I. Stoichiometry, *Thermochim. Acta* 318 (1998) 165–175.
- [53] A.N. Nelwamondo, D.J. Eve, M.E. Brown, Thermal and structural studies of amide complexes of transition metal(II) chlorides. II. Kinetics, *Thermochim. Acta* 318 (1998) 177–186.
- [54] A. de La Croix, R.B. English, M.E. Brown, L. Glasser, Modelling the thermal decomposition of solids on the basis of lattice energy changes. Part I. Alkaline-earth carbonates, *J. Solid State Chem.* 137 (1998) 332–345.
- [55] A. de La Croix, R.B. English, M.E. Brown, L. Glasser, Modelling the thermal decomposition of solids on the basis of lattice energy changes. Part II. Alkaline-earth peroxides, *J. Solid State Chem.* 137 (1998) 346–352.
- [56] M.E. Brown, B.D. Glass, Pharmaceutical applications of the Prout–Tompkins rate equation, *Int. J. Pharm.* 190 (1999) 129–137.
- [57] B.D. Glass, M.E. Brown, P.M. Drummond, Photoreactivity versus activity of a selected class of phenothiazines: a comparative study, in: A. Albin, E. Fasani (Eds.), *Drugs: Photochemistry and Photostability*, Royal Society of Chemistry, Cambridge, UK, 1998, pp.134–149.
- [58] M.E. Brown, E.M. Antunes, B.D. Glass, M. Lebet, R.B. Walker, DSC screening of potential prochlorperazine–excipient interactions in preformulation studies, *J. Therm. Anal. Calorimetry* 56 (1999) 1317–1322.
- [59] M.E. Brown, R.E. Brown, Kinetic aspects of the thermal stability of ionic solids, *Thermochim. Acta* 357/358 (2000) 133–140.
- [60] M.E. Brown, M. Maciejewski, S. Vyazovkin, R. Nomen, J. Sempere, A. Burnham, J. Opfermann, R. Strey, H.L. Anderson, A. Kemmler, R. Keuleers, J. Janssens, H.O. Desseyn, C.-R. Li, T.B. Tang, B. Roduit, J. Malek, T. Mitsuhashi, The ICTAC Kinetics Analysis Project. Part I. Results, *Thermochim. Acta* 355 (2000) 125–143.
- [61] K. Rotich, B.D. Glass, M.E. Brown, Thermal Studies on some substituted aminobenzoic acids, *J. Therm. Anal. Calorimetry* 64 (2001) 681–688.
- [62] M.E. Brown, Some thermal studies on pyrotechnic compositions, *J. Therm. Anal. Calorimetry*, 65 (2001) 323–334.
- [63] M.E. Brown, B.D. Glass, Decomposition of solids accompanied by melting—Bawn kinetics, *Thermochim. Acta*, to be published.
- [2] M.E. Brown, L. Glasser, B.V. Stewart, The reversible nature of the thermal decomposition of ammonium metavanadate, *Progress in Vacuum Microbalance Techniques*, Heyden, London, Vol. 2, 1973, pp. 125–137.
- [3] M.E. Brown, K.C. Sole, M.W. Beck, Isothermal DSC study of the thermal decomposition of potassium permanganate, in: *Proceedings of the Eighth ICTA, Bratislava 1985*, *Thermochim. Acta* 92 (1985) 149–152.
- [4] M.W. Beck, M.E. Brown, Thermochemistry and reaction kinetics of the antimony/potassium permanganate pyrotechnic systems, in: *Proceedings of the 10th International Pyrotechnic Seminar, Pyrotechnics, Fraunhofer-Institut Fur Treib- und Explosivstoffe*, 1985, paper 14.
- [5] M.E. Brown, R.A. Rugunanan, A thermo-analytical study of the pyrotechnic reactions of black powder and its constituents, in: *Proceedings of the Ninth ICTA, Jerusalem*, *Thermochim. Acta* 134 (1988) 413–418.
- [6] M.E. Brown, R.L. Drennan, A thermal study of the manganese/barium peroxide pyrotechnic system, in: *Proceedings of the 14th International Pyrotechnic Seminar, Jersey*, 1989, pp. 423–432.
- [7] E.A. Turi, B. Wunderlich, M.E. Brown, T. Ozawa, Report on the Workshop: Thermal Analysis Education, ICTA 1988, *Thermochim. Acta* 148 (1989) 13–35.
- [8] J.H. Flynn, M.E. Brown, E. Segal, J. Sestak, Report on the Workshop on Kinetics held at ICTA-9, *Thermochim. Acta* 148 (1989) 45–47.
- [9] M.E. Brown, M.J. Tribelhorn, M.G. Blenkinsop, Use of thermomagnetometry in the study of iron-containing pyrotechnic systems, in: *Proceedings of the 10th ICTA, Hatfield, UK*, 1992, *J. Therm. Anal.* 40 (1993) 1123–1130.
- [10] M.E. Brown, M.W. Beck, R.L. Drennan, R.A. Rugunanan, M.J. Tribelhorn, M.G. Blenkinsop, Fuel/oxidant relationships in some binary pyrotechnic systems, in: *Proceedings of the Fourth International Symposium on Explosives Technology and Ballistics, National Institute of Explosives Technology, Pretoria Technikon*, 1992, pp. 391–405.
- [11] M.J. Tribelhorn, D.S. Venables, M.G. Blenkinsop, M.E. Brown, Comparison of iron and zinc as pyrotechnic fuels, in: *Proceedings of the Fifth International Symposium on Explosives Technology and Ballistics, National Institute of Explosives Technology, Pretoria Technikon*, 1994, pp. 180–190.
- [12] S.J. Taylor, M.E. Brown, Computer modelling of pyrotechnic combustion, in: *Proceedings of the Fifth International Symposium on Explosives Technology and Ballistics, National Institute of Explosives Technology, Pretoria Technikon*, 1994, pp. 167–179.
- [13] M.J. Tribelhorn, M.E. Brown, A thermoanalytical study of some zinc-fuelled binary pyrotechnic systems, in: *Proceedings of the Sixth European Symposium on Thermal Analysis, Italy 1994*, *Thermochim. Acta* 269/270 (1995) 649–663.
- [14] M.E. Brown, R.M. Flynn, J.H. Flynn, Report on the ICTAC Kinetics Committee (August 1992 to September 1994), *Thermochim. Acta* 256 (1995) 477–483.
- [15] M.E. Brown, Kinetics of solid state reactions by thermal methods, in: *Proceedings of the 11th National Symposium of the Indian Thermal Analysis Society, Jammu, India*, 1998, pp. 1–8.

Research papers published in proceedings of international conferences

- [1] M.E. Brown, B.V. Stewart, The thermal decomposition of ammonium metavanadate-differential enthalpic analysis, in: H.G. Wiedemann (Ed.), *Proceedings of the Third International Conference on Thermal Analysis, Davos, Switzerland, August 1971*, Birkhauser Verlag, Basel, Vol. 2, 1972, pp. 313–320.

Research papers published in proceedings of local conferences

- [1] M.W. Beck, M.E. Brown, R.H.M. Cross, Electron microscopic study of intersolid pyrotechnic reactions, Proc. Electron Microsc. Soc. South Afr., Vol. 12, 1982, pp. 95–96.
- [2] M.E. Brown, R.H.M. Cross, K.C. Sole, M.W. Beck, Correlation between surface changes of potassium permanganate crystals and theoretical speculation on their decomposition mechanism, Proc. Electron Microsc. Soc. South Afr., Vol. 14, 1984, pp. 153–154.
- [3] R.L. Drennan, M.E. Brown, Thermal analysis of pyrotechnic oxidants: barium and strontium peroxides, in: Proceedings of the Second National Symposium on Explosives and Ballistics, Pretoria, 1990, pp. 101–105.

Papers on educational topics

- [1] A. Allsobrook, M.E. Brown, L. Glasser, A crystallographer's nightmare, J. Chem. Educ. 50 (1973) 688–689.

- [2] M.E. Brown, C.A.R. Phillpotts, Non-isothermal kinetics, J. Chem. Educ. 55 (1978) 556–560.
- [3] M.E. Brown, Purity determination by differential scanning calorimetry, J. Chem. Educ. 56 (1979) 310–313.
- [4] M.E. Brown, A. Goosen, Activation-energy diagrams, Spectrum 20 (2) (1982) 10–13.
- [5] M.E. Brown, K.J. Buchanan, A. Goosen, Thermodynamically and kinetically controlled products, J. Chem. Educ. 62 (1985) 575–578.

Articles of a general nature

- [1] M.E. Brown, The role of defects in the decomposition of solids, Chemsa 5 (1979) 74–75.
- [2] M.E. Brown, Thermal analysis—a group of often-neglected techniques, Chemsa 7 (1981) 192–195.
- [3] M.E. Brown, D.J. Eve, T.M. Letcher, 80 years of chemistry at Rhodes, Chemsa 9 (1983) 136–139.
- [4] M.W. Beck, M.E. Brown, D. Cawthorne, Pyrotechnic delay compositions, Chemsa 10 (1984) 398–401.