

Prof. Emeritus Perry T. Kaye

BSc (Natal), BSc (Hons) (UNISA), MSc (Natal), DPhil (Oxon), FRSC, C.Chem., FRSSAf.

University of Natal, Pietermaritzburg:

Lecturer (1979-1982) and Senior Lecturer in Organic Chemistry (1983-1987),

Rhodes University:

Professor of Organic Chemistry (1987→2007), Head of the Department of Chemistry (1992→2007), Director, Rhodes Centre for Chemico- and Biomedical Research (2005→) and Professor Emeritus (2009→).

Summary of Research output

- 157 Papers published in peer-reviewed journals.
- 95 Invited lectures and contributions (lectures or posters) at national and international conferences.
- 67 Higher degree projects (MSc and PhD) completed under my supervision or co-supervision.
- 8 Post-graduate projects (5 PhD, 1 MSc and 2 post-doc) currently being supervised or co-supervised.

Awards and Prestigious Lectures

Vice-Chancellor's Distinguished Teaching Award/Medal, Rhodes University, 1994.

AECI Medal of the South African Chemical Institute, 1996

Frank Warren Lecture, SACI Frank Warren Conference, Mtunzini, KZN, 1997.

Fellowship of the Royal Society of South Africa.

Vice-Chancellor's Senior Research Award/Medal, Rhodes University, 2001.

Royal Society of SA Frank Warren Memorial Lecture, University of Cape Town, 2003.

Victor Pretorius Memorial Lecture, University of Pretoria, 2006.

Gold Medal of the South African Chemical Institute, 2007.

SACI Gold Medal Lecture, *BOCC'08* – Bi-national Organic Chemistry Conference, Kruger National Park, 2008.

Invited Plenary Lecture, SACI National Convention, East London, Dec., 2013

Research interests

1. Heterocyclic Compounds with Medicinal Potential

- a) Applications of the Baylis-Hillman reaction in the synthesis of biologically active heterocyclic systems, including novel indolizine, chromone, chromene, thiochromene and coumarin derivatives as potential HIV-1 protease and integrase inhibitors and quinoline derivatives as potential antimalarials.
- b) Synthesis of DXR inhibitors as potential antimalarials.
- c) Synthesis of HIV-1 PR, IN and RT inhibitors.

2. Physical Organic Chemistry

Kinetic-mechanistic and theoretical studies [at the Quantum Mechanical (QM) and Density Functional (DFT) levels (Accelrys Dmol³ and Gaussian-03)] of organic reaction mechanisms.

3. Novel Ligand systems

Design, synthesis and evaluation of novel ligand systems, including molecularly imprinted polymers (MIP's), for metal selective chelation and metathesis catalysts.

Recent Publications

Synthesis and evaluation of coumarin derivatives as potential dual-action HIV-1 protease and reverse transcriptase inhibitors

Temitope O. Olomola, Rosalyn Klein, Nicodemus Mautsa, Yasien Sayed and Perry T. Kaye*
Bioorg. & Med. Chem., 2013, 21, 1964-1971.

¹H NMR-Based Kinetic-Mechanistic Study of the Intramolecular Transesterification of 2-*exo*-3-*exo*-Dihydroxybornane Monoacrylate Esters

A.R. Duggan, L.P. Mciteka, K.A. Lobb and P.T. Kaye*
S. Afr. J. Chem., 2013, 66, 140-144.

Exploring DOXP-reductoisomerase binding limits using phosphonated *N*-aryl- and *N*-heteroarylcarboxamides as DXR inhibitors.

Taryn Bodill,^c Anne C. Conibear,^a Marius K. M. Mutorwa,^a Jessica L. Goble,^b Gregory L. Blatch,^{b,c,d} Kevin A. Lobb,^{a,c} Rosa Klein^{a,c} and Perry T. Kaye^{a,c} *
Bioorg. & Med. Chem., 2013, 21, 4332- 4341.

Evaluation of Baylis-Hillman routes to 3-(aminomethyl)coumarin derivatives

Idris Olasupo, Nathan R. Rose, Rosalyn Klein, Luqman A. Adams, Oluwole B. Familoni and Perry T. Kaye,*
Synth. Commun. 2014, 44(2), 251-258.

Synthesis of Cinnamate Ester-AZT Conjugates as Potential Dual-action HIV-1 Integrase and Reverse Transcriptase Inhibitors

Olomola, T.O., Klein, R. and Kaye, P.T.
Tetrahedron, 2014, 70, 9449-9455.

Novel Furocoumarins as Potential HIV-1 Integrase Inhibitors

Olomola, T.O., Mosebi, S., Klein, R., Traut-Johnstone, T., Coates, J., Hewer, R. and Kaye, P.T.
Bioorganic Chemistry, 2014, 57, 1-4.

Strong Base- or Acid-Mediated Chemoselectivity Shifts in the Synthesis of 2*H*-Chromene or Coumarin Derivatives from Common Baylis-Hillman Adducts.

Faridoon, Temitope.O. Olomola, Matshawandile Tukulula, Rosalyn. Klein and Perry.T. Kaye*
Tetrahedron, 2015, 71, 4868-4873.

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