The Pattison Lecturer for 2001-2002

Prof. Anthony G.M. Barrett, FRS

Sir Derek Barton Professor of Synthesis, Glaxo Professor of Organic Chemistry, and Director of the Wolfson Centre for Organic Chemistry in Medical Science, Department of Chemistry, Imperial College of Science Technology and Medicine, London, UK.

From April 29 to May 1, Professor Barrett will present three lectures.
For more information click here.

Tony Barrett obtained his B.Sc. degree with 1st class honors (1973) and his Ph.D. (1975) with Professor Sir Derek H.R. Barton at Imperial College of Science and Technology (IC) in 1973. He was immediately appointed to lecturer in organic chemistry at IC and was promoted to senior lecturer in 1982. In 1983, he was appointed full professor of Chemistry at Northwestern University in Evanston, Illinois, and in 1990 he moved further west to Colorado State University. After ten years research in the USA, he returned to IC as Glaxo Professor of Organic Chemistry, Director of the Wolfson Centre for Organic Chemistry in Medical Science and Head of the Organic Section. He was appointed the Sir Derek Barton Professor of Synthetic Chemistry in 1999. Dr. Barrett has received numerous awards for his contributions to research from the Royal Society of Chemistry (1980 Meldola Medal, 1982 Harrison Medal, 1986 Corday-Morgan Medal, 1994 Tilden Lectureship, 1997 Award in Synthetic Organic Chemistry), Imperial College (1981 Armstrong Medal), the American Chemical Society (1986 Arthur C. Cope Scholar Award), the Camille and Henry Dreyfus Foundation (1987 Teacher-Scholar Award), the Japan Society for the Promotion of Science (1989 Fellowship), Glaxo Wellcome (2000 Award for Innovative Chemistry) and the Specialised Organic Sector Association (2000 Innovation Award). He was elected a Fellow of the Royal Society in 1999. Dr. Barrett has co-authored over 270 publications and patents. He has carried out extensive studies on the preparation of heterocyclic compounds, organometallic intermediates, macrocyclic ethers and lactones, and bioactive natural products including antifungal agents. The Barrett group has addressed problems in the materials and polymer arenas and in combinatorial chemistry. A new class of multimetallic macrocyclic molecules, the star porphyrazines, has been designed and these compounds show unusual coordination chemistry. His contributions to combinatorial chemistry, parallel synthesis and synthesis on solid supports include the introduction of impurity annihilation, polymer backbone disassembly and chameleon catches.

Professor Barrett will present three lectures during his visit to UWO.

****** All lectures will take place at 3:00 p.m. in the Medical Sciences Building (MSB), room 193 ******

1. Recent Advances in Procedures for Parallel Synthesis

Monday, April 29, 3:00 p.m., MSB 193

Synthesis is a labor-intensive endeavor. It is essential in the 21st century that synthetic procedures be simplified in order to enhance the discovery process. Ideally the synthesis of novel compounds in a high state of purity should be experimentally straightforward without recourse to classical slow19th or 20th century protocols such as solvent partition or chromatography. The mix, filter, evaporate mantra for parallel synthesis and combinatorial chemistry will be outlined. The lecture will highlight recent applications of Ring Opening Metathesis Polymers (ROMPs) as supports for reagents and scavengers. These gel polymers, ROMPgels, are available by the polymerization of strained alkenes including norbornene and 7-oxanorbornene derivatives using the Grubbs' carbene Ru(=CHPh)Cl2(PCy3)2 and related ruthenium catalysts. Such polymerization reactions of polyfunctional monomers are simple to carry out and directly provide insoluble, high loading polymer supported reagents or scavengers for use in parallel synthesis in the solution phase. ROMPgel reagents and scavengers are noted for their high reagent loadings, their excellent swelling characteristics in diverse solvents and high rates of reactions. Parallel synthesis using ROMPgel reagents is simple in execution and readily provides libraries of pure products. The methods are applicable in medicinal chemistry and in other arenas. Secondly, the use of ROMPs in impurity annihilation and in polymer backbone disassembly will be highlighted as alternative strategies in parallel synthesis.

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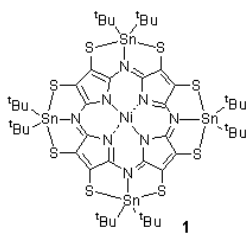
2. Peripherally-Functionalized Porphyrazines: Novel Metallomacrocycles with Broad, Untapped Potential

Tuesday, April 30, 3:00 p.m., MSB 193

Porphyrazinethiols, amines and alcohols are endowed with multiple sites for the chelation of metal ions. These macrocyclic heterocycles are able to complex a diverse variety of metal ions within the ring cavity. Yet, at the same time, the peripheral dithiolene, enediamine or enediol entities are also available to bind to additional metal ions to form multimetallic macrocyclic arrays. The preparation of such polydentate ligands, their unusual redox and coordination chemistry and their applications will be outlined. These multiply heterocyclic compounds are exemplified by **1** to **4**.



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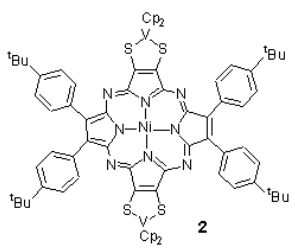

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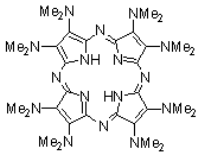

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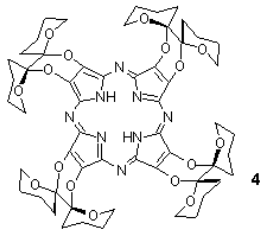

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3. Recent Advances in the Total Synthesis of Antifungal Natural Products

Wednesday, May 1, 3:00 p.m., MSB 193

There is very considerable alarm amongst the medical profession regarding fungal disease. Dermatophyte infections such as tinea pedis and candidiasis, although rarely fatal, are common and widespread throughout the world. There are other fungal diseases that are far darker in reputation and significance. Pathogens such as Candida albicans, Cryptococcus neoformans, Pneumocystis carinii and Aspergillus fumigatus are the cause of considerable morbidity and mortality in immuno-compromised patients. Populations at risk from these opportunistic fungal infections include AIDS patients; recipients of cancer chemotherapy and persons with genetically impaired immune function. Current therapies for the treatment of serious systemic fungal infection are deficient. The gold standard amphotericin is acutely toxic and there are resistance problems with azole fungistatic agents. There is a need for novel therapies for serious fungal disease and for the management of the legions of topical fungal infections. The lecture will describe recent studies on the total synthesis of natural products in a quest for novel antifungal agents. Compounds endowed with multiple cyclopropane arrays; spiroketals and macrocyclic ring systems will be highlighted.

Refreshments served before talks

For more information contact: Robert Hudson (519-661-2111 ext. 86349)

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