Applications of Lithium, Palladium, Magnesium, Gold, and Copper in Heterocyclic Chemistry

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Part 1. Lithium in Heterocyclic Chemistry
Coverage will be the generation of hetaryllithium reagents (halogen-lithium exchange, direct deprotonation, and directed lithiation), applications in synthesis, and construction of heterocycles using lithiation methods. All of the major pi-deficient and pi-excessive 5- and 6-membered ring heterocycles will be covered. Ring fragmentation reactions and the "halogen-dance" chemistry are also included in Part 1.

Part 2. Palladium in Heterocyclic Chemistry
Following an introduction to palladium catalyzed cross-coupling reactions, which include the Kumada, Suzuki, Stille, Negishi, Hiyama, Heck, Buchwald-Hartwig, and Sonogashira reactions, as well as the related oxidative coupling/cyclization methods, applications of palladium in synthesis will be presented.

Part 3. Magnesium, Gold, and Copper in Heterocyclic Chemistry
An introduction to the relative new applications of magnesium, gold, and copper in heterocyclic chemistry will be presented. Focus will center on the powerful new magnesium reagents for halogen-magnesium exchange and deprotonation (magnesiation), the potency of gold reagents as novel Lewis acids, and the extraordinarily versatile cross coupling reactions of copper as a low-cost alternative to palladium.

Part 4. Appendix
An Appendix covering material not presented during the course will be available either in hard copy form at the Conference or by requesting an electronic version from Professor Gribble.

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