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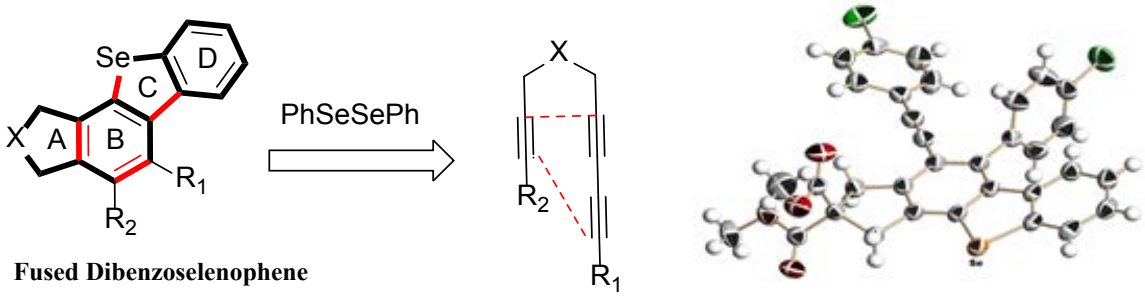
Fused multifunctionalized dibenzoselenophenes from tetraynes

Yimin Hu
Anhui Normal University, China

Selenium, an essential trace element and antioxidant, is used in the prevention of various cancers. Daily supplements of selenium reportedly reduce the risk of several types of cancer in patients with a history of skin cancer. Benzoselenophene and dibenzoselenophenes are important intermediates in the production of perfumes, dyes, plastics, agricultural materials, and drugs. Aryne precursors that can assemble three consecutive functional groups on a benzene ring in a "one-pot" process are compatible with various reagents and functional groups; such precursors are suitable in versatile transformations, thereby greatly expanding the current bounds of aryne chemistry and drug synthesis. Scheme shows novel cyclization method involving freeradical and the subsequent regioselective functionalization of an unactivated C–H bond for the preparation the dibenzoselenophene core. Fused heterocyclic ring systems contain conjugate planes at the A–B–C–D ring junctures. Control of the relative and absolute configurations of these conjugate planes in selenium, and the construction of the tetracyclic framework of the complex heterocyclic system, represent significant synthetic challenges. Compared with ordinary organic selenium derivatives, dibenzoselenophene derivatives prepared in the present experiment have multiple rings, complex and variable structures, and wide application prospect in chemical production and clinical medicines.



Fused Dibenzoselenophene

Biography

Yimin Hu has completed his PhD from Nanjing University and postdoctoral studies from Bowling Green State University. He has published more than 35 papers in reputed journals and has received the Thieme Chemistry Journal award for 2010 by the editorial boards of the journals Synlett, Synthesis, and Synfacts. His research area focused on palladium catalyzed cascade and HDDA cycloaddition reaction by means of C–H activation and Heck coupling process to constract a complementary approach to the remarkably powerful Domino reaction.

yiminhu@ahnu.edu.cn

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