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**Synthesis and Reactions of 10-Chloro-10,9-(epoxyalkano) selenoxanthenes and 1-Chloro-1-phenyl-3*H*-2,1-benzoxaselenoles.**

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10-Chloro-10,9-(epoxyalkano) selenoxanthenes were prepared by the reaction of 9-(hydroxyalkyl)-selenoxanthenes with *N*-chlorosuccinimide, and 1-chloro-3*H*-2,1-benzoxaselenoles were similarly synthesized. The selenurane structure of 10-chloro-10,9-epoxyethanoselenoxanthene was established by X-ray analysis. The <sup>1</sup>H NMR and EI mass spectral data supported the selenurane structures of these compounds. Reactions of the selenoxanthene selenuranes with sodium acetylacetonide gave selenoxantheniomethanides. Thermal reactions and reductions were conducted.

[Heterocycles, 30, 279 (1990)]

**Photochemical Oxygenation of Olefins by Heterocyclic *N*-Oxides: Mechanistic Characteristics in the Photochemistry of Pyrimido[5,4-*g*]pteridine-10-oxide.**

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A novel heterocyclic *N*-oxide, pyrimido[5,4-*g*]pteridine-10-oxide (1), oxygenates cyclohexene (2) and norbornene (3) under the photochemical conditions to give the corresponding oxidation products [cyclohexenol, cyclohexenone, epoxycyclohexane, and cyclohexanone from (2); *exo*-epoxynorbornane, norcamphor, and cyclohexene-4-carboxaldehyde from (3)]. Experimental results clearly indicate that the photochemical oxygenation by (1) involves a single-electron transfer from the olefins, (2) and (3), to a singlet-excited (1) followed by oxygen-atom transfer rather than the oxene mechanism proposed for the photo-oxygenation of olefins by 3-methylpyridazine-2-oxide.

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**Photo-oxygenation of Benzene Derivatives by a Novel Derivative of the Heterocyclic *N*-Oxide, Pyrimido[5,4-*g*]pteridine 5-Oxide, involving a Single-electron-transfer Process.**

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1,3,7,9-Tetrabutyl pyrimido[5,4-*g*]pteridine-2,4,6,8 (1*H*, 3*H*, 7*H*, 9*H*)-tetrone 5-oxide (1) efficiently oxygenates benzene (2*a*), toluene (2*b*), and anisole (2*c*) under photochemical conditions in a reaction mode different from that of 3-methylpyridazine 2-oxide (oxene-mechanism) to give the corresponding phenols [phenol from (2*a*); *o*- and *p*-cresols from (2*b*); *o*- and *p*-methoxyphenols from (2*c*)] as major products. Experimental results clearly show that the photochemical oxygenation of (2*a-c*) by (1) involves a single-electron-transfer process followed by oxygen-atom transfer rather than interception of atomic oxygen generated from (1) in an excited state.