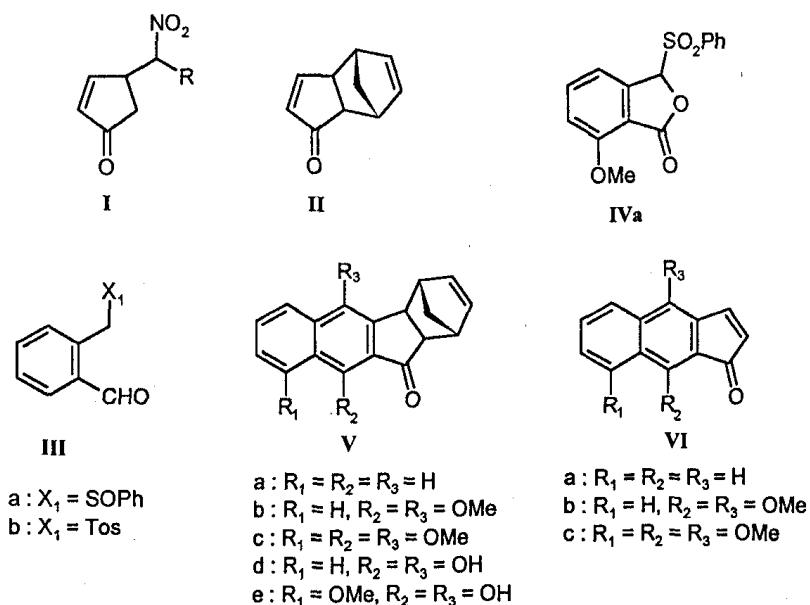
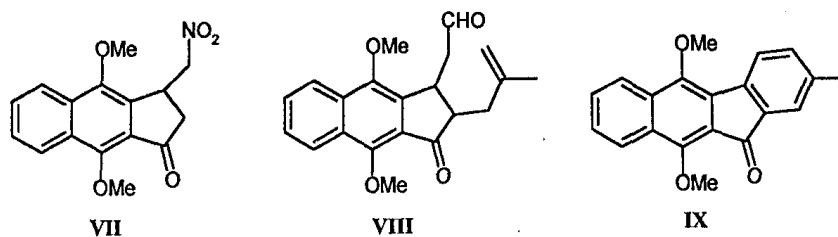


## Abstract

A new preparative route to 4-nitroalkyl-2-cyclopentenones **I** has been developed. This involved DBU-catalyzed addition of a nitroalkane to enone **II** followed by retro Diels-Alder reaction. Anionic annulation of 1,4-dipolar synthons **III** and **IV** with Michael acceptor **II** provided **V**, directly or after *O*-methylation in good yields. These adducts **V** in turn, on flash vacuum pyrolytic decomposition at  $\sim 500$  °C, 0.01 mm afforded **VI** in excellent yields.

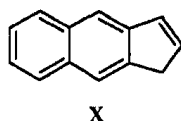


2,3-Disubstituted benz[*f*]indenone **VIII** and 3-nitromethylbenz[*f*]indanone **VII** were prepared from **V** and **VI** respectively in good overall yields. Tandem Michael-aldol reaction of **VII** with methacrolein provided benz[*b*]fluorenone **IX**, the basic skeleton of

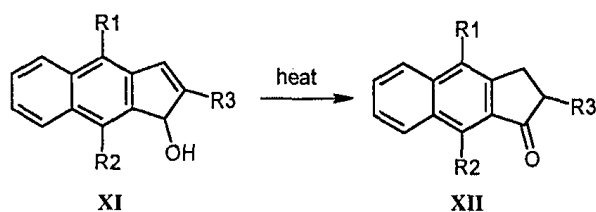


stealthins. The same compound *i.e.*, **IX** was also obtained from an acid catalysed intramolecular ene reaction of **VIII**.

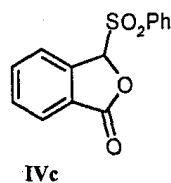
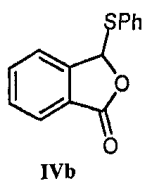
1*H*-Benz[*f*]indene **X**, an important intermediate in peptide synthesis has been conveniently prepared in one step from **Va** under the condition of Huang-Minlon reaction.



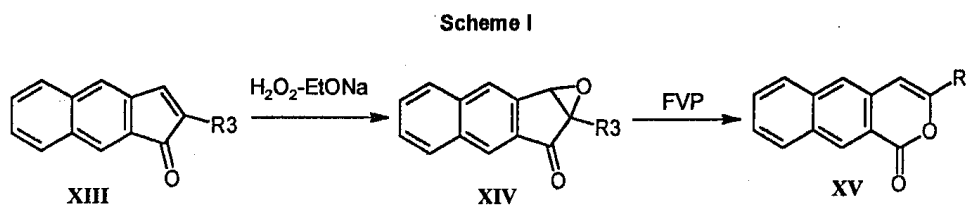
Benz[*f*]indenols **XI** have been shown to undergo thermal rearrangement via [1,5] H shift to give corresponding indanones **XII** in high yields. The rearrangement has been generalized with 5 examples.



3-(Phenylthio)phthalide **IVb**, which is more readily prepared than 3-(phenylsulfonyl)phthalide **IVc**, has been introduced as a substitute for the latter in annulation with various Michael acceptors.



A new synthesis of isocoumarins has been developed. This is based on the sequence outlined in Scheme I. It has been generalized with 6 examples. The epoxidation of indenones (Scheme I) with  $\text{H}_2\text{O}_2\text{-EtONa}$  is much superior to the literature methods in terms of yields and convenience.



The indenone epoxide rearrangement has also been executed on XVI and XVII for entry to naphthopyranones and pyridone respectively.

