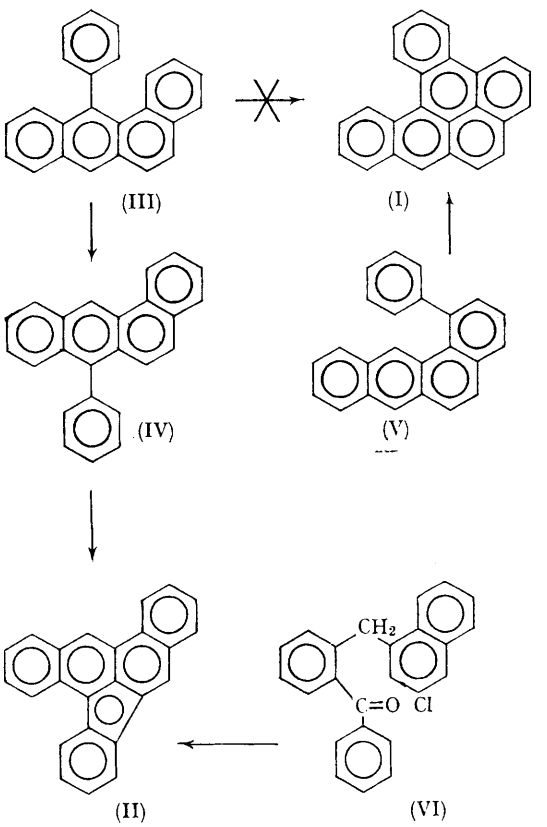
The Synthesis of Dibenzo[*a*,*l*]pyrene

By FRANK A. VINGIELLO, JOSE YANEZ, and EDWARD J. GREENWOOD
(*Department of Chemistry, Virginia Polytechnic Institute, Blacksburg, Virginia*)



LAVIT-LAMY and BUU-HOÏ[1] have recently reported that what has been considered as "dibenzo[*a*,*l*]-pyrene" (I)[2] is in fact dibenzo[*a*,*e*]fluoranthrene (II). The difficulty in attempting to prepare (I) from 12-phenylbenz[*a*]anthracene (III) is that (III) rearranges to 7-phenylbenz[*a*]anthracene (IV) which then yields (II). It appeared to us that a more suitable precursor to (I) would be 1-phenylbenz[*a*]anthracene (V) since (a) dehydrogenation would involve the active 12-position of the benz[*a*]anthracene moiety, and (b) the phenyl ring in (V) is less hindered than it is in (III) and hence should be less prone to rearrange.

We now report the first successful synthesis of dibenzo[*a*,*l*]pyrene (I) (m.p. 162—163°, pale yellow plates from benzene–ethanol). When (V) was treated with $SnCl_4$–$AlCl_3$ in benzene a 60% yield of (I) resulted. A sample of this interesting new hydrocarbon is being submitted for carcinogenic activity studies.

In support of Lavit-Lamy and Buu-Hoï's[1] work we find that 2-(3-chloro-1-naphthylmethyl)benzophenone[3] (VI) on treatment with alumina[4] at 240° yields 40% of (II). Presumably the first step is an aromatic cyclodehydration[4] to yield 6-chloro-7-phenylbenz[*a*]anthracene which undergoes dehydrohalogenation to give (II).

(*Received, May 12th, 1966; Com.* 320.)

[1] D. Lavit-Lamy and N. P. Buu-Hoï, *Chem. Comm.*, 1966, 92.
[2] E. Clar and D. Stewart, *J. Chem. Soc.*, 1951, 687.
[3] E. J. Greenwood, Ph.D. thesis, Virginia Polytechnic Institute, Blacksburg, Virginia, 1966.
[4] F. A. Vingiello and A. Borkovec, *J. Amer. Chem. Soc.*, 1956, **78**, 3205.