

Dhananjay Nasipuri (1925–2009)

An outstanding researcher and an inspiring teacher, Dhananjay Nasipuri was born on 1 April 1925 into a family of modest means in the district of Birbhum, West Bengal. His inherent academic brightness was apparent from early years. He was a rank-holder in Matriculation and I Sc and stood first in B Sc (Chemistry Honours) and M Sc, both from Calcutta University. After a short stint as a chemist in the Institute of Jute Technology, Calcutta, he joined as an Assistant Lecturer in the Department of Pure Chemistry at the College of Science of Calcutta University in 1951. This gave him the opportunity to start his doctoral research in synthetic organic chemistry under the supervision of J. C. Bardhan. He received his PhD degree in 1955. Subsequently, he joined as a postdoctoral research scientist under the Colombo Plan (1957–58) and studied metal-ammonia reduction of monobenzoid compounds with A. J. Birch at the University of Manchester. One of the two papers published during this time elaborated the final mechanism of Birch reduction. Later (1963–65) he collaborated with E. L. Eliel of the University of Notre Dame as a Fulbright Fellow on the study of stereospecific hydride transfer to ketones from some alkoxyaluminum dichlorides. He was awarded the D Sc degree of Calcutta University in 1964 on the strength of his published papers. Having served as a faculty member in Calcutta University for many years (1951–69), he moved to the Indian Institute of Technology, Kharagpur as Professor of Chemistry in April 1969. After retirement in 1985, he was associated with the Indian Institute of Chemical Biology, Calcutta as INSA Senior Scientist and CSIR Emeritus Professor.

Nasipuri was a dynamic research guide. During his long independent research career (1956–92) he guided 25 students including the present author to their doctoral degrees and published 127 papers as principal author. His keen aptitude for research in polynuclear hydrocarbons enabled him, within the first six years of his independent research, to synthesize a number of polynuclear aromatics belonging to the phenanthrene, indenophenanthrene, chrysene, pycene and phenalene series. The structure of the minor hydro-

carbon ($C_{26}H_{24}$, second Diels hydrocarbon) arising from dehydrogenation of cholesterol remained unsettled till 1977; Nasipuri's success in determining its structure through detailed NMR analysis and corroborating the same by two unambiguous syntheses (1977, 1979) deserve special mention. He achieved total synthesis of several cleistanthoid diterpenes (AB trans-fused octahydrophenanthrenes) like methyl ethers of sugiol, xanthopherol, totarol, nimbiol, isonimbiol, hinokiol, miltirone, veadeiroic acid and veadierol, some of these syntheses involving the elegant biogenetic type cyclization step. He also developed new synthetic methods for O and N heterocycles. Each of the two furocoumarins namely dihydropsoralidin and isopsoralidin was synthesized by two different



routes. His particular acumen in nitrogen heterocycles is reflected in the synthesis of several diazaequilenin, azasterone, steroidal β -lactam, benzoquinoline and benzindole derivatives.

He had deep interest in organic stereochemistry from the beginning of his research career. His sojourn to the laboratory of Eliel further augmented this interest. He developed several enantioselective hydride transferring reagents capable of reducing a large variety of prochiral ketones to chiral alcohols with high enantioselectivity. Of all these reagents, the most effective is isobornyloxylaluminum dichloride which was cited in a review by H. C. Brown as *Nasipuri's reagent*. In order to rationalize the reduction data, Nasipuri proposed

from time to time different models of the transition state for the reaction. He studied several 3-aryl- and 3-hetaryl-cyclohexenone derivatives using dynamic NMR techniques to determine therein the energy barrier to restricted rotation around the crowded C–C and C–N single bonds. His achievements in stereochemical research were internationally recognized and he was invited twice as Session Chairman in Gordon Conferences – asymmetric synthesis (1975) and organic stereochemistry (1990). He published the well-known book *Stereochemistry of Organic Compounds: Principles and Applications* (Wiley Eastern) first in 1991. A revised second edition appeared in 1994. As a comprehensive text of modern organic stereochemistry, it has few parallels and it compares well with the treatise of Eliel *et al.*

Nasipuri was offered academic positions by many distinguished universities and research institutes. He was a Senior Royal Society Bursar Fellow in Dyson-Perrins Laboratory, Oxford University, Leverhulme Visiting Fellow in the University of New South Wales, Visiting Professor in the University of Toronto, Visiting Scientist in the University of North Carolina, Chapel Hill, USA, invited lecturer in the Polish Academy of Sciences, and also in the University of Tokyo and the University of Hong Kong. As a UGC Guest Professor (1990–91), he delivered lectures in several Indian universities.

He was elected to the fellowship of the Royal Society of Chemistry, England (1965), the Indian Academy of Sciences, Bangalore (1976) and the Indian National Science Academy, New Delhi (1978). Nasipuri was the President of the Indian Chemical Society, Calcutta during 1994–95. In appreciation of his contributions to organic chemistry, a one-day seminar on 'Synthesis and stereochemistry of organic compounds' was held on 15 December 1995 in Calcutta.

Nasipuri passed away on 28 December 2009. He is survived by two sons and a daughter.

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