A Photochemical Reaction of Fluorinated [3,3](1,3,5)Cyclophanes
フッ素化[3,3](1,3,5)シクロファン類の光化学反応に関する研究

(九大学先導研, 九大院理) 二上小佳子 1) 2) 上田 俊司 1) 2) 古賀 徹 1) 2) 五島 健太 1) 張 華 1) 2) 新名主 輝男 1)

Prismanes constitute an infinite family of (CH)n polyhedra that chemists find esthetically appealing because of their molecular architecture. Notwithstanding their structural regularity, many years of effort were needed before the first three members, prismane cubane and pentaprismane could be successfully synthesized. Recently, attention has been focused on the challenging objective of constructing the higher prismanes, in particular, hexaprismane Many diverse synthetic strategies have been developed, and significant progress toward the synthesis of hexaprismane derivatives has been made. First of all, in the photochemical reaction of F6[3,3](1,3,5)cyclopane in CD2Cl2 under N2 in a quartz NMR tube, 3h-irradiation at 254-nm light followed by TLC analysis provided at least three photoproducts. Then we monitored the photochemical reaction by HPLC and examined the isolation of the photoproducts. On Fab-mass spectrum which showed the molecular ion peak m/z 384 is the same as F6[3,3]CP. We now tried to isolate and characterize the photoproduct. In the photochemical reaction of F6[3,3]CP in wet CH2Cl2 under inert atmosphere in a quartz NMR tube, irradiation at 254 nm and the reaction mixture was separated by HPLC. We found that a lot of photoproducts in HPLC chromatogram, most of them are similar to those in dry CH2Cl2. Separation and identification of the photoproducts is in progress.

We have also studied the photochemical reaction of monofluoro[3,3](1,3,5)CP in dry or wet CH2Cl2, and isolated and characterized some cage compounds. We will report here the characterization of the photoproducts and possible reaction mechanism of the photochemical reactions.