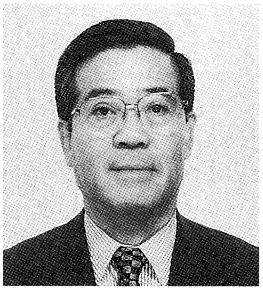
Synthetic Organic Chemistry is a Mature Science ?



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"There are excitement, adventure, and challenge, and there can be great art in organic synthesis" (*R. B. Woodward*)

This year *Society of Synthetic Organic Chemistry, Japan* (SSOCJ), is celebrating its 60th anniversary. Although 60's-aged persons like me are not youthful, synthetic organic chemistry is still a young science, its beginning being marked by the urea synthesis by Whöler in 1828. Ever since, synthetic organic chemists have been demonstrating their great ability to assemble molecules from the elements and simple starting materials. Certainly, organic synthesis is a science or technology that can make "something valuable from almost nothing" (E. J. Corey's words). In fact, we have witnessed remarkable accomplishments in organic synthesis in terms of both methodology and complexity of the target molecules. As Dieter Seebach says, "Japan illustrates how quickly a new nation can come into the playing field and completely change the course of the game"(*Angew. Chem.*, 1990). The importance (or contribution) of organic synthesis to chemistry and its peripheral sciences is clearly evidenced by the fact that Nobel Prizes have been awarded to more than 30 synthetic organic chemists, including Ryoji Noyori (the former President of SSOCJ) in 2001.

Unfortunately for us, however, such great strides tend to prompt comments such as "given enough manpower and money, synthetic chemists can make any molecules." Indeed, chemistry in general and synthetic organic chemistry in particular are now often criticized as a "mature science", while chemistry has a rather poor reputation within the media and the general public. Nonetheless, I have never imagined that chemistry has lost its identity or that synthetic organic chemistry is a mature science. As Seebach states (*op. cit.*), "such crass contradiction between the accomplishments and the reputation of chemistry, of which organic synthesis and its industrial applications constitute a significant part, can only be characterized as remarkable." Also, I would like to join K. C. Nicolaou to say : "how unwise these statements are, for one only has to compare our synthetic power with that of nature in order to recognize the rather primitive state of the art"(*Classics in Total Synthesis*, 1996).

While we recognize the current trend that the important traditional reasons for undertaking a synthesis such as proof of structure, total synthesis "for its own sake", and search for new reactions justify synthetic research to a much less extent than ever, we should continue to work hard to develop more expedient, economical, and environmentally benign processes, and also to gain significant footholds within the domains of peripheral sciences such as biological science and material science. In other words, we should/can be the main players not only in innovations of existing practical processes and inventions of brand-new processes, but also in the interfaces of biology and material science with chemical synthesis. To do so, we should take the risk of more complicated systems with particular functions. To set up new chemical entities or goals, we should take it into serious consideration that the most significant fundamental discoveries or inventions will come from individuals with good ideas, often far from the mainstream fashion of the day. Unless we are prepared to adopt new kinds of goals, synthetic organic chemistry might be referred as a mature science.

One message is clear: *Synthetic organic chemistry has a bright future !!*