

## Cyclopolymerization of Dimethyl Dipropargylmalonate in Supercritical Carbon Dioxide to Give a Regular Polyene Containing Predominantly Five-Membered Rings

백지원, 허영재, 김화용, 이윤우\*

서울대학교 화학생물공학부

(ywlee@snu.ac.kr\*)

Recently, the literature reflected an intensive interest in metal-catalyzed olefin metathesis polymerization in supercritical CO<sub>2</sub>. Chemical interactions of supercritical CO<sub>2</sub> with substrates and/or catalysts offer an as yet largely unexplored potential for activity and selectivity control. 1,6-Heptadiyne containing appropriate substituents at the 4-position is a very interesting example of substituted acetylenes, which can be susceptible to the ring-forming polymerization to give a new type of conjugated polymer backbone system. It is a very important task to prepare cyclopolymers that have only one size ring. Herein, we report for the first time the cyclopolymerization of dimethyl dipropargylmalonate by MoCl<sub>5</sub> catalysts (without using any well-defined alkylidene complexes as initiators) in supercritical CO<sub>2</sub> which encourage regioselective addition of the first triple bond to an alkylidene to give highly regular polyene containing one size rings in the polymer backbone as a consequence of chemical interaction of CO<sub>2</sub> with the transition metal catalysts.