

CBC SEMINAR ANNOUNCEMENT



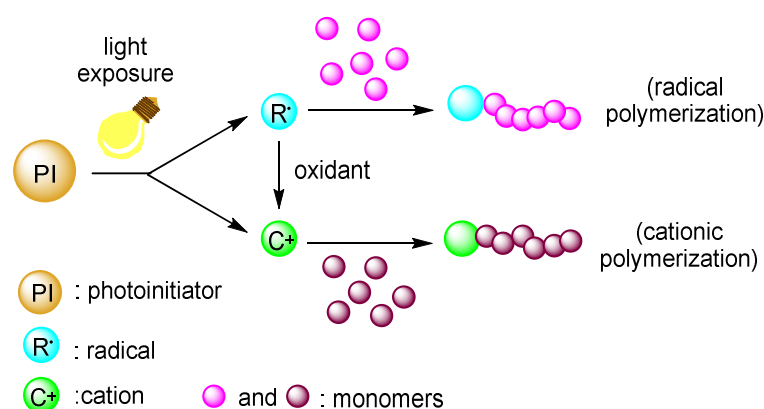
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**Macromolecular Syntheses by Photoinduced Radical
and Cationic Polymerizations**

Photochemical reactions [1,2] are efficiently used in macromolecular synthesis, involving initiation, control of the reaction kinetics and molecular structures, functionalization, and decoration, etc.

Synthesis of polymers by free radical, cationic, (Figure 1) and step-growth mechanisms [3] can be realized through photochemical processes.



Recently, PET reactions are increasingly used in atom transfer radical polymerizations (ATRP) (Figure 1) [4, 5] and “Click reactions” [6, 7] allowing polymers to be formed with well-defined structures and functionalities providing several distinct advantages, including temporal and spatial controls, rapid and energy efficient activation.

The process is based on photoredox reactions of copper catalysts under various radiation sources with or without various photoinitiators. Furthermore, specific applications such as block and graft copolymer formation, metal-polymer nano-composites etc. will be covered as well. Quite recently, metal free photoinduced atom transfer radical polymerizations have been introduced based on the electron transfer reactions involving photoexcited sensitizer, amine and alkyl halide [8,10]. In the presentation, the mechanistic aspects of free radical and cationic [11] photo polymerizations under metal free conditions will be focused.

References

- [1] S. Dadashi-Silab, S. Doran, Y. Yagci, *Chem. Rev.* **2016**, 116, 10212-10275
- [2] Y. Yagci, S. Jockusch, N.J. Turro, *Macromolecules*, **2010**, 43, 6245-6260
- [3] E. Sari, G. Yilmaz, S. Koyuncu, Y. Yagci, *J. Am. Chem. Soc.*, 2018, 140, 40, 12728
- [4] S. Dadashi-Silab, M. A. Tasdelen, Y. Yagci, *J. Polym. Sci. Part A: Polym. Chem.* **2014**, 52, 2878-2888
- [5] X. Pan, M. A. Tasdelen, J. Laun, T. Junkers, Y. Yagci, K. Matyjaszewski, *Prog. Polym. Sci.*, **2016**, 62, 73-125
- [6] M. A. Tasdelen, G. Yilmaz, B. Iskin, Y. Yagci, *Macromolecules*, **2012**, 45, 56-61
- [7] M. A. Tasdelen, Y. Yagci, *Angew. Chem. Int. Ed.*, **2013**, 52, 5930-5938.
- [8] C. Kutahya, S. F. Aykac, G. Yilmaz, Y. Yagci, *Polym. Chem.*, **2016**, 7, 6094-6098
- [9] S. Jockusch, Y. Yagci, *Polym. Chem.*, **2016**, 7, 6039-6043
- [10] A. Allushi, S. Jockusch, G. Yilmaz, Y. Yagci, *Macromolecules*, **2016**, 49, 7785-7792
- [11] M. Ciftci, Y. Yoshikawa, Y. Yagci, *Angew. Chem. Int. Ed.*, **2017**, 56, 519-523

Date: 2nd December 2019 (Monday)
Time: 11.00am to 12.30pm
Venue: SPMS Lecture Theatre 4
Host: Associate Professor Goto Atsushi