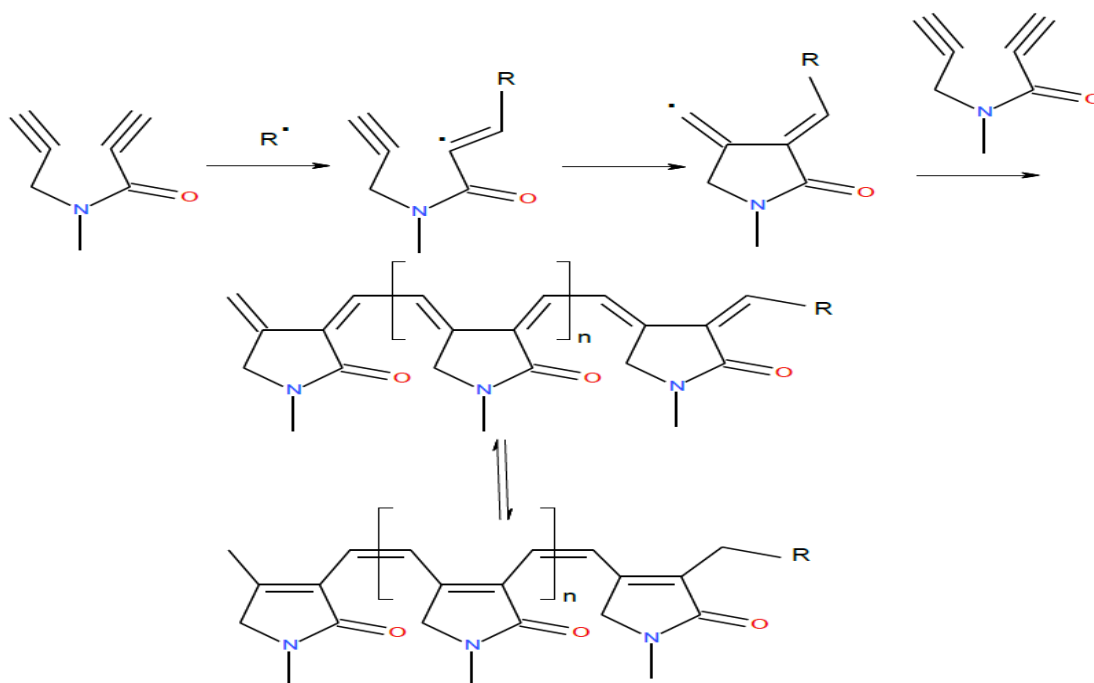


Conductive Pyrrolidone Polymers

By: Robert B. Login rloginconsulting.com

I wrote two pdf's concerning this subject "Unsaturated Lactam Polymers" and "Polypyrrolidones and Cyclopolymerization". Both pdf's can be found on my web page rloginconsulting.com. Please take a look. Recently, I have another idea for conductive polymers that would be water soluble and contain pyrrolidone or lactone functionality.

These ideas are based on metathesis(transition metal) catalyzed polymerizations or free radical cyclopolymerization. For example:

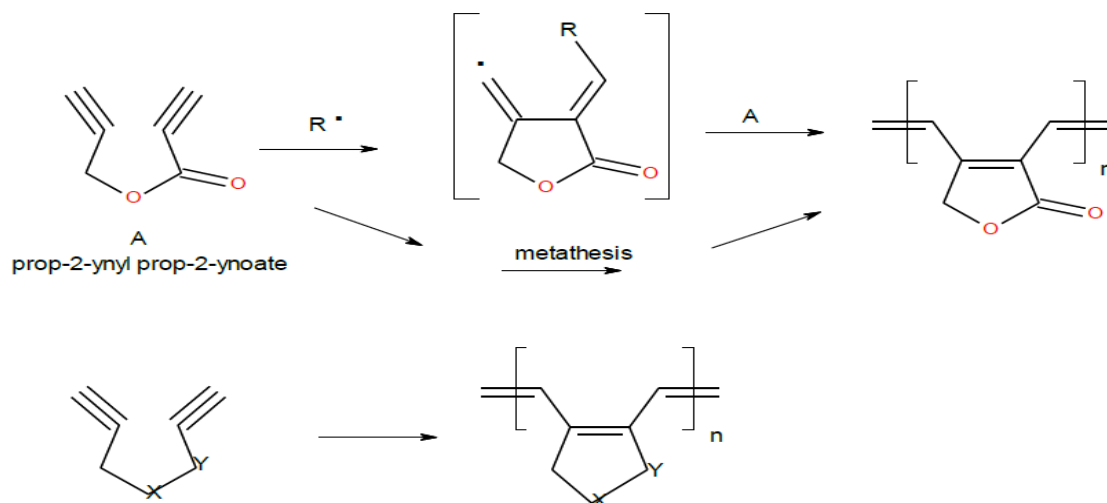


Scheme 1: Free radical initiated cyclopolymerization. The following references highlights similar metathesis ring closure reactions.

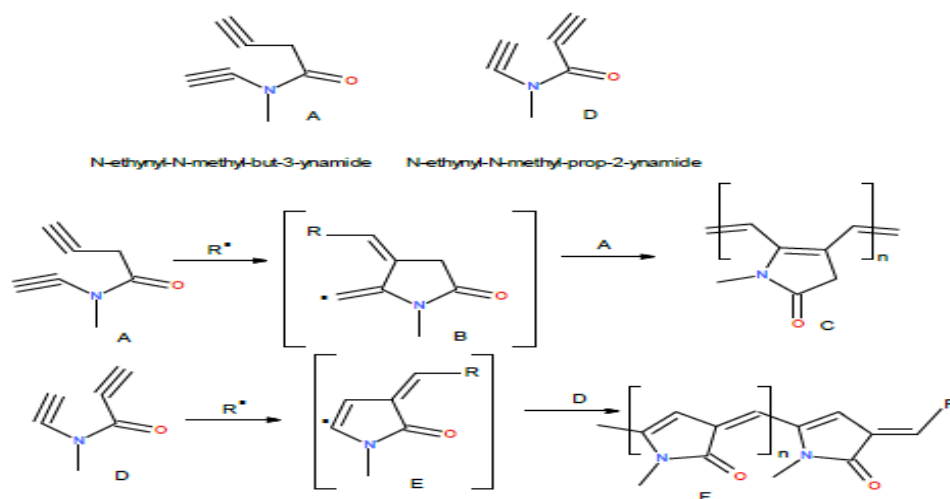
Ojima, I., Tzamarioudaki, M., Li, Z., & Donovan, R. J. (1996). Transition metal-catalyzed carbocyclizations in organic synthesis. *Chemical reviews*, 96(2), 635-662.

Pasini, D., & Takeuchi, D. (2018). Cyclopolymerizations: Synthetic tools for the precision synthesis of macromolecular architectures. *Chemical reviews*, 118(18), 8983-9057.

Kang, C., Jung, K., Ahn, S., & Choi, T. L. (2020). Controlled cyclopolymerization of 1, 5-hexadiynes to give narrow band gap conjugated polyacetylenes containing highly strained cyclobutenes. *Journal of the American Chemical Society*, 142(40), 17140-17146.



Scheme 2: Here X&Y could be carboxy to generate the above BLO polymer or they could be other atom combinations such as in scheme 1.



Scheme 3: Other congeners that might polymerize by FR or with transition metals. Mechanisms.

I illustrate these proposals with “pyrrolidones” but other lactams might also fit this chemistry.

Thank you for reading this proposal.

Dr. Robert B. Login rloginconsulting.com