

Towards Phosphorus-Containing Polymers via SET LRP and ATRP

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Phosphorus polymers have many applications in industry. Most commonly synthesized via free radical polymerization techniques, their uses are widely documented. This work details the use of controlled radical techniques to synthesize polymers of predetermined geometry and molecular weight.

Single Electron Transfer Living Radical Polymerisation is a relatively new technique for controlled polymerisations¹. SET LRP is more tolerant of polar reaction conditions and polymerisations can be performed at ambient temperature whilst achieving high conversion in relatively short spaces of time. SET LRP has been used along with Transition Metal Mediated Living Radical Polymerization (TMM LRP, often termed ATRP)^{2,3} to synthesise polymers containing phosphorus. Some of the phosphorus-containing monomers used in this work are difficult to homo-polymerise and so it has been necessary to develop a system that will allow their polymerisation with a co-monomer. Ultimately this system will be used to create a library of phosphorus containing co-polymers, Figure 1.

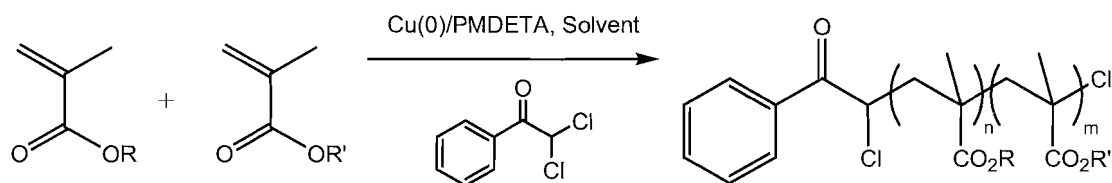


Figure 1: Reaction Scheme for co-polymer library

References

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