RECENT PROGRESS IN RAFT POLYMERIZATION OF *NVP*

Anna Kargaard[a], Rueben Pfukwa[a] & Bert Klumperman[a]

[a]Stellenbosch University, Department of Chemistry & Polymer Science, De Beers Street, Stellenbosch, 7600 South Africa

ABSTRACT

Poly(*N*-vinylpyrrolidone) (PVP) is a water soluble, non-toxic, biocompatible, hydrophilic polymer widely used in many applications, including as an auxiliary in pharmaceuticals and cosmetics. Reversible addition-fragmentation chain-transfer (RAFT) mediated polymerization has been vigorously studied for the polymerization of *N*VP, seen in Fig. 1, due to its ability to control the molecular weight and dispersity of the polymers, as well as impart easy modification post-polymerization due to the presence of functional R and Z groups on the chain transfer agent (CTA).

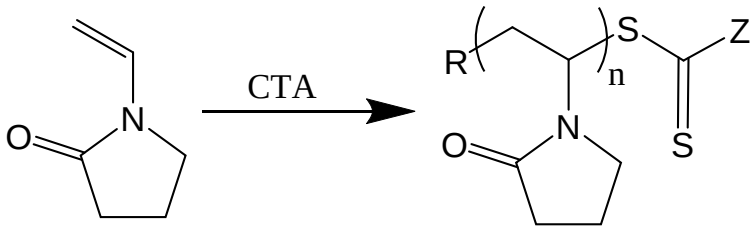

Fig. 1: RAFT mediated polymerization of *N*VP

However, there are some restrictions regarding the CTAs that can be employed for polymerization of *N*VP, previously described in detail by Pound *et al*.[1] Inspired by work done by Destarac and coworkers[2], we have been able to obtain a method whereby these restrictions can be overcome. This allows for the production of PVP with an even wider range of chain-end functionalities. Furthermore, better chain-end fidelity is achieved, which is essential in applications that require quantitative conversion in post-polymerization transformation of chain-ends.

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References:

[1]Pound, G.; Eksteen, Z.; Pfukwa, R.; Mckenzie, J.; Lange, R.; Klumperman, B., *J. Polym. Sci.: Part A: Polym. Chem.* **2008**, *46*, 6575.
[2]Guinaudeau, S.; Mazieres, S; Wilson, J.; Destarac, M., *Polym. Chem.* **2012**, *3*, 81.