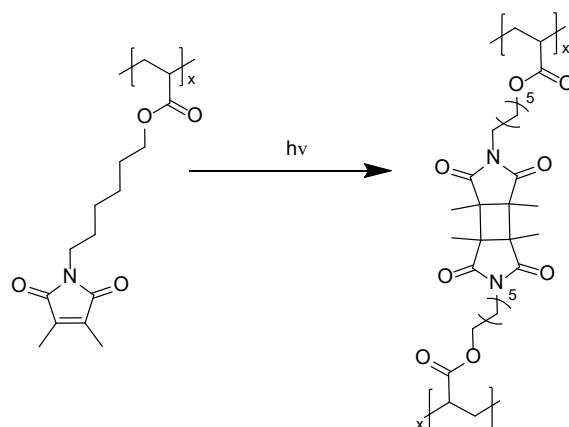


# Photo cross linker for emulsion polymerization

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The current research area deals with the synthesis of photo cross linkers for emulsion polymerization. The topic follows on from the work of C. Henschke. The film of emulsion polymerization swells when drying or dissolves by contact with solvents. The photo cross-linker is intended to prevent this by cross-linking the polymer in a [2+2] cycloaddition through irradiation with UV light. For this purpose, the reactive cross-linking unit is pyrroldione, which can form stable dimers (Scheme 1).<sup>[1]</sup>



**Scheme 1:** Photo cross-linking reaction of  $P_{MT1}$ .<sup>[1]</sup>

The UV absorption of the cross linker  $P_{MT1}$  lies around 230 nm and 300 nm. This low wavelength potentially cleaves the polymer backbone, which lead to the idea of mixing thioxanthone to the polymer as photo sensitizer in order to enable photo cross-linking with wavelengths around 360 - 430 nm.<sup>[1]</sup>

References:

[1] D. Kuckling, M. E. Harmon, C. W. Frank, *Macromolecules* **2002**, *35*, 6377.