**282 - Click/transclick reactions in combination with CRP: "TAD's the spirit"**

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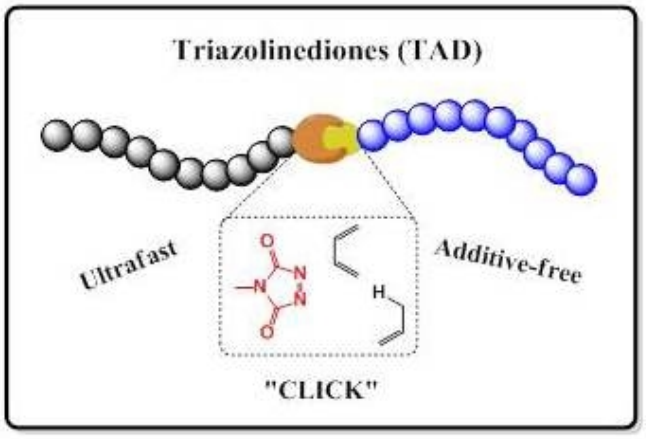
By focusing on synthetic reactions that are highly specific and reliable, the concept of click chemistry has enabled a transfer of the creative power of chemical synthesis to a wide range of scientific research areas and applications. In this contribution, we introduce ***triazolinedione compounds*** (TAD), build up from an aza-moiety, as scalable and robust building blocks for click chemistry applications in the area of polymer synthesis. Examples of facile catalyst-free and ultrafast macromolecular functionalization, polymer-polymer linking and polymer cross-linking under ambient conditions, mostly in combination with copper-mediated controlled radical polymerization techniques, will be presented.[1] An added feature to this powerful type of chemistry is the intense colour switch from the TAD compounds (red) to the corresponding adducts (colourless), providing a visual feedback system.

Moreover, triazolinediones, when combined with indole reaction partners, can also be 'unclicked' at elevated temperatures, and furthermore integrally transferred to an alternative reaction partner. This new concept of **'*transclick*' *reactions*** has also been used to introduce thermoreversible links into materials, giving rise to dynamic bulk properties such as polymer network healing, reshaping and recycling.




In conclusion, we think that TAD-based click/transclick reactions, in combination with controlled radical polymerization techniques, can enable an unprecedented advancement in the field of macromolecular engineering.

1. Billiet, S.; Bruycker, K. D.; Driessen, F.; Goossens, H.; Speybroeck, V. V.; Winne, J. M.; Du Prez, F. E. *submitted,* **2014** .

**Tuesday, August 12, 2014 04:40 PM**
Controlled Radical Polymerization (01:00 PM - 05:30 PM)
**Location: Hilton San Francisco Union Square**
**Room: Continental Ballroom 4**



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