Exploiting The Base-Triggered Thiol/Vinyl-Ether Addition To Prepare Well-Defined Nanophase Separated Thermo-Switchable Adhesives

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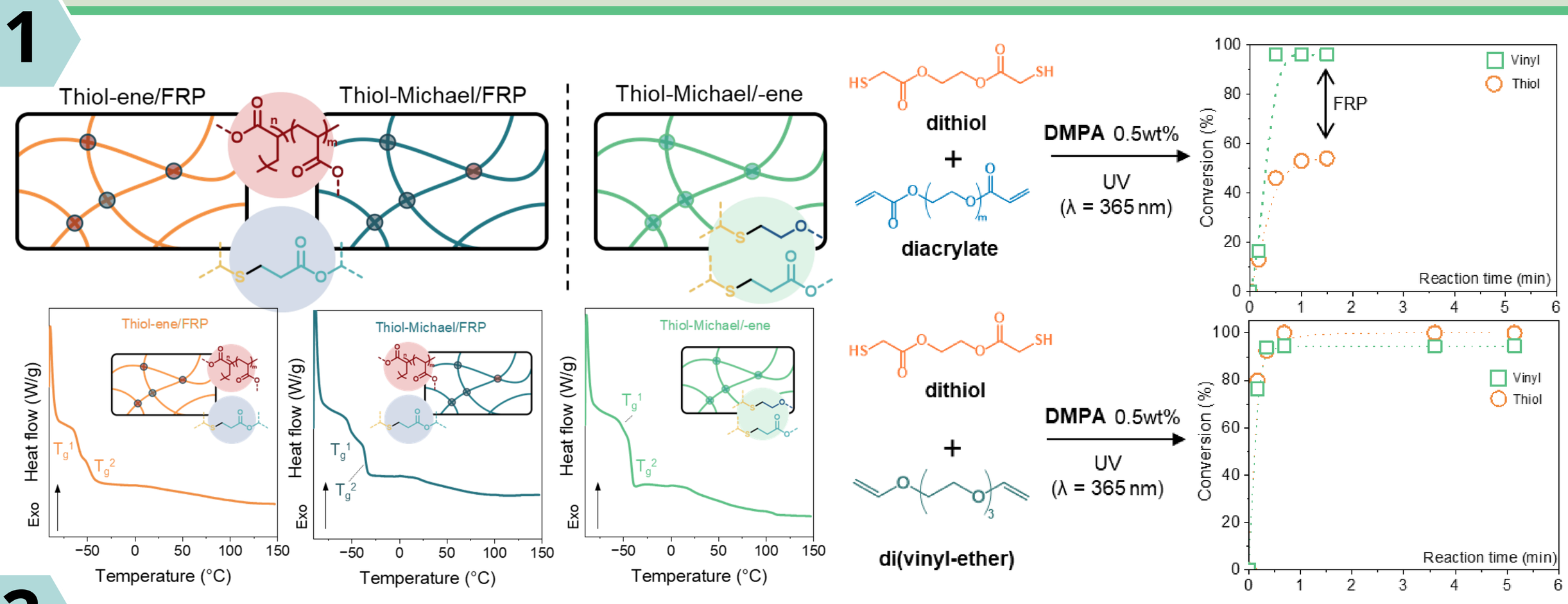
Switchable pressure-sensitive adhesives can reversibly **attach and detach** from surfaces when triggered by stimuli. This study explores using **sequential thiol-Michael and thiol-ene** polymerizations as a simple method to improve these adhesives. It focuses on **addressing side reactions and stability issues** to create **well-defined networks** with **improved adhesive performance**.

More information

1



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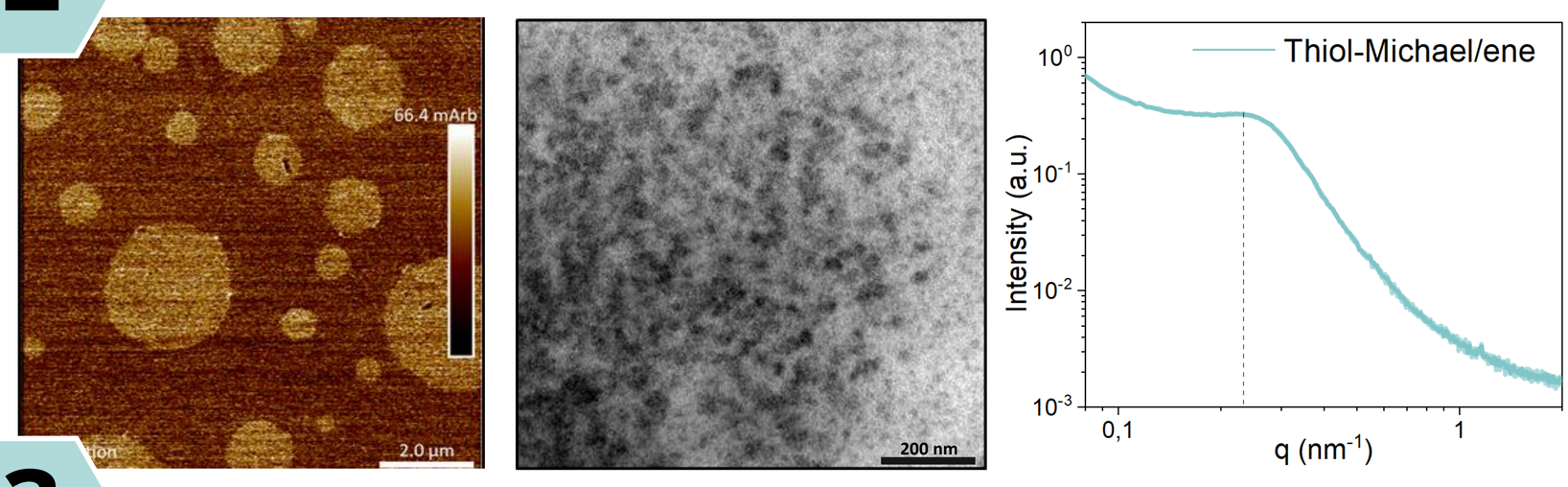

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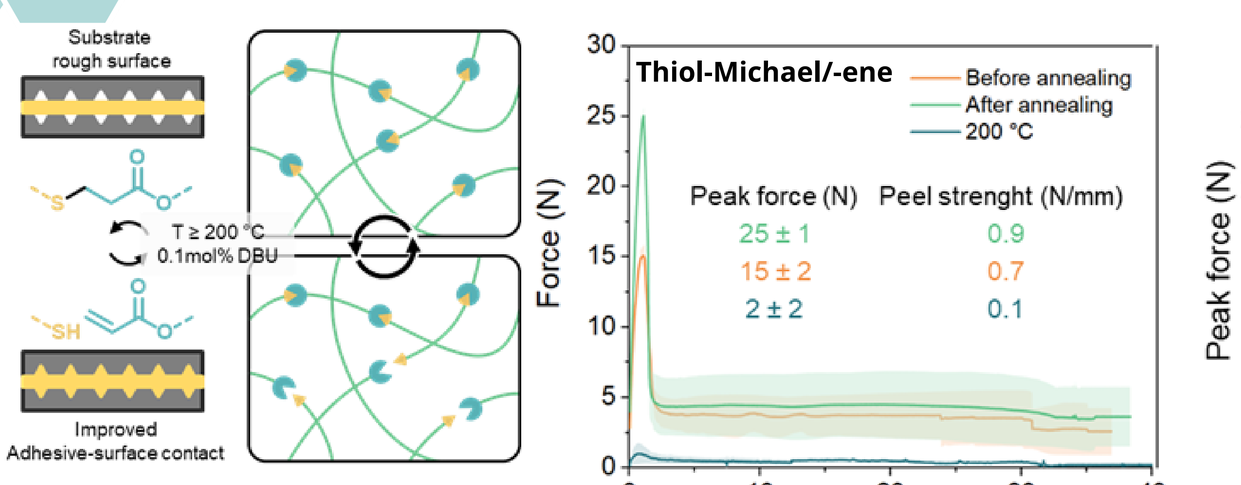

Figure 1. Scheme of the networks. DSC of the 3 formulations. Kinetics measured by photo FTIR of diacrylate and divinyl ether with dithiol.

Figure 2. AFM and TEM figures and SAXS curve for thiol-Michael/-ene adhesive. Comparison of a typical acrylic PSA with this works PSA.

Figure 3. Dynamicity application for PSAs. Pell test of the Thiol-Michael/-ene before annhealing, without anhealing and with heating. Peak Force of the 1st applicationd and 2nd application.

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Conclusions

- Orthogonality of the thiol with acrylates and vinyl ether has been explored.
- Sequential Thiol-Michael/-ene polymerization provides a well defined network.
- Well defined nerwork provides better adhesive properties.
- Thiol-acrylate dynamicity enhances the adhesion properties.
- DSC curves shows the phase separation.
- AFM, TEM and SAXS results confirms the microphase separation.

References

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