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Squaramide-based interpenetrated networks for load-bearing applications

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Propositions

accompanying this thesis

Squaramide-based Interpenetrated Networks for Load-bearing Applications

1. Understanding how cells interact with their environment mechanically, or the study of mechanobiology is critical to understand development, disease and its treatment. *Chapter 1, this thesis.*

2. The chemical toolbox holds great potential for investigating and comprehending the thermal responsiveness of supramolecular polymers. *Chapter 2, this thesis*.

3. Understanding the rearrangement of dynamic bonds and hydrogel filaments under physiological conditions can yield effective strategies for engineering suitable extracellular matrices for diverse applications. *Chapter 3 & 4, this thesis*.

4. Incorporating nanofillers is consistently an effective strategy for introducing new functions into hydrogels. *Chapter 5, this thesis*.

5. Chemistry is the foundation for understanding material properties and subsequently controlling cell behavior within three-dimensional environments. *Nat. Rev. Chem. 2022, 6, 726-744.*

6. The production scale-up of supramolecular biomaterials for clinical trials and commercial applications can be a challenge. *Front. Chem. 2021, 9, 1-8.*

7. The incorporation of multiple non-covalent and reversible covalent bonds in synthetic materials can effectively create a robust and dynamic microenvironment. However, the complexity of these interactions, often resulting in multiple products, make it challenging to elucidate their effects on cellular behavior. *Nat. Mater. 2016, 15, 13-26.*

8. A thorough and accurate characterization of cell-matrix interactions necessitates the integration of chemical, physical, and biological techniques. *Nano. Lett. 2018, 18, 1-8.*

9. Doing more does not always equate to greater efficiency; reducing mistakes is what truly enhances efficiency.

10. There is a very thin line between drawing inspiration and becoming overwhelmed.

Ying Chen

Leiden, 8th November 2024