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Squaramide-based supramolecular materials for 3D cell culture applications

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Stellingen

Behorend bij het proefschrift

Squaramide-based supramolecular materials for 3D cell culture applications

1. Supramolecular materials with responsiveness and self-healing properties are appealing for engineering cell microenvironment. However, the development of materials with dynamically tunable properties is still largely required to understand some complex biological processes. *Chapter 1, this thesis*
2. Squaramides with dual hydrogen bonding and aromatic characters are excellent and useful non-covalent building blocks to fabricate the self-recovering supramolecular hydrogels as synthetic scaffolds for 3D cell culture. *Chapter 2, this thesis*
3. Chemical structural modification or introducing the second network offers a simple and effective method to overcome the major drawback of the supramolecular hydrogels due to their weak mechanical stiffness. *Chapter 3 and 5, this thesis*
4. Light is an effective strategy to spatially and temporally control the properties of hydrogel materials. *Chapter 3, 4, and 5, this thesis*
5. Cyclic 1,2-Dithiolane could be used as an outstanding photoactive motif to fabricate and modify both the biocompatible supramolecular and polymer hydrogels. *Chapter 3, and chapter 4, this thesis*
6. Double network hydrogels based on supramolecular hydrogels and polymeric hydrogels could directly improve both their mechanical stiffness and strength, leading to them suitable for the 3D culture of hard tissues. *Chapter 5, this thesis*
7. Bioactive cues (e.g., RGD peptide) are necessary to offer the ligand sites for the cells to bind and maintain regular cell activities through cell-material interactions. *Chapter 3, and chapter 5, this thesis*
8. There are more methods than problems.
9. If you are a great experimenter in the lab, you can also become a very good cook at home.
10. There is no shortcut in life, every step is the only way.