# Biofabrication with novel thiol-mediated dynamic covalent hydrogels

Hydrogels with dynamic crosslinks are envisioned as materials that are suitable for artificial 3D matrices that can mimic the native extracellular matrix of cells. Whereby dynamic bonds can much better resemble the viscoelastic behaviour of tissues than static bonds. [2] By tuning concentration and properties of the precursors, we can tune the properties of the hydrogel matrix and this affects cell behavior.

Inspired by the work of R. Carillo and co-workers [2], which showcases the dynamicity of the nucleophilic aromatic substitutions of tetrazines, we have developed PEG hydrogels based on this novel robust and versatile DCC reaction. These hydrogels exhibit self-healing and stress relaxation properties and can be used for cell encapsulation. [3] These viscoelastic properties are important for cell encapsulation as this influences cell behaviour. [1]
To broaden the scope for applicability of these hydrogels further, we would like to investigate if these gels can be made compatible with popular biofabrication techniques, such as bioprinting. [5] For this purpose hydrogels will be produced and the potential shear thinning behaviour of the gel will be studied, to see if this gel can be injected and under which conditions. Moreover, there has to be investigated if and how these gels can be used or adapted, for example by incorporating a trigger, to make them suitable for known biofabrication methods.

**References**

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