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**Designing responsive peptide hydrogels using peptide-responsive polymer conjugates** ALBERTO SAIANI, School of Materials, The University of Manchester, ANTON MASLOVSKIS, ALINE MILLER, School of Chemical Engineering, The University of Manchester — Self-assembly represents a simple and efficient route to the construction of large, complex structures. Peptide self-assembly in particular offers the possibility to design new functional bio-materials that find application in drug delivery and tissue engineering. The  $\beta$ -sheet motif is of particular interest as short peptides can be designed to form  $\beta$ -sheet rich fibres that entangle and consequently form hydrogels. These hydrogels can be functionalised using specific biological signals and can also be made responsive through the use of enzymatic catalysis and/or conjugation with responsive polymers. In this presentation we will focus on the design of the latter using peptide-responsive polymer conjugates. The main objective is to create hydrogels possessing an internal transition resulting from the conjugation with the responsive polymer in the gel state that can be used as a trigger for example the release of a drug.

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