

# Multifunctional, pH-Responsive Carbon Nanotube- and Graphene Oxide / 2D Oligoglycine Tectomer Hybrids

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Amino-terminated oligoglycines non-covalently self-assemble, through cooperative hydrogen bonding formation, into biocompatible rigid 2D structures called tectomers, either in solution or in surface-promoted processes.[1,2] This unique self-assembly features have been successfully exploited to coat negatively-charged surfaces, such as mica [1,3] and bacteria membranes.[4] Furthermore, we have recently demonstrated the capabilities of tectomers as efficient pH-

responsive 2D nanocarriers, making them very attractive for theranostics. [5]

Here we show that 2D oligoglycine tectomers effectively coat carboxylated multi-walled carbon nanotubes and strongly interact with graphene oxide. The resulting hybrids can be made into free-standing, water resistant, conducting composites or applied in the form of thin, pH-responsive coatings onto wet-spun graphene oxide fibers. Monitoring of cell viability of pancreatic cell lines, seeded on those hybrids, shows that they can be used as scaffolds to tissue engineer tumour models for studying *ex vivo* the tumour development and response to treatment. A variety of applications in biomedicine and in the development of functional materials (including smart textiles, sensors, and bioelectronic devices) can be envisioned for these hybrids.[6]

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## References

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