

Non-covalent functionalization of carbon nanomaterials with pyrene-amine to construct a defined engineered tissue

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Tissue engineering is one of the hot topics in research that has attracted the attention of many researchers. This field of research is based on the scaffold used in the development of the tissue. Carbon nanomaterials are one of the interesting nanomaterials that showed amazing electrical, and mechanical properties. However, they suffered from low water dispersibility. Therefore, in this work, we aim to functionalize the carbon nanomaterials non-covalently using a synthesized molecule of pyrene-NH₂. The carbon nanomaterials have successfully functionalized non-covalently with pyrene-NH₂ and showed great water dispersibility. Moreover, the functionalized carbon nanomaterials have been characterized by UV-Vis, zeta potential, and TEM analysis. These functionalized nanomaterials have been incorporated efficiently in the construction of engineered tissue of 3T3 cells. These constructed showed excellent electrical conductivity with the highest conductivity in the case of the functionalized graphene sheets. Finally, the constructs showed good biocompatibility that could be used for *in vivo* studies.