

Supplementary Information

Table S1. Electrical conductivity of hybrid hydrogels

Material	Polymer matrix	Application	Material Concentration	Hydrogel conductivity	σ_{\max}	Notes	Ref
Pd microwires	GelMA gelatin methacrylate	Muscle tissue engineering	1 mg/ml	9.50E-02	2.5	palladium-based metallic glass submicron wires	1
Aniline dimer	Gelatin	Neural tissue engineering. Drug delivery	10 % w/w gelatin	1.00E-04	1.00E-03	Aniline carboxylated	2
Aniline tetramer	HA-SH thiolated hyaluronic acid + PEGDA polyethylene glycol diacrylate	Muscle tissue engineering	7.5 % w/w	7.00E-06	2.30E-02		3
Aniline pentamer	Agarose	Neural tissue engineering	5.1% w/w	1.00E-03 (at 0.96 % w/w)	1.50E-02	Agarose aminated	4
PPy	sodium alginate (SA) + carboxymethyl chitosan (CMCS)	Neural tissue engineering	40 % w/w	7.40E-06 (at 0.02 % w/w)	8.00E-03		5
PPy	HA hyaluronic acid		3.35 mg/ml	1.20E-03	7.30E-03	1% w/v Ppy polymerizes directly on the backbone of the HA	6
PPy	Alginate	Tissue engineering	0.67 mg/ml	8.20E-04	1.00E-02		7

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