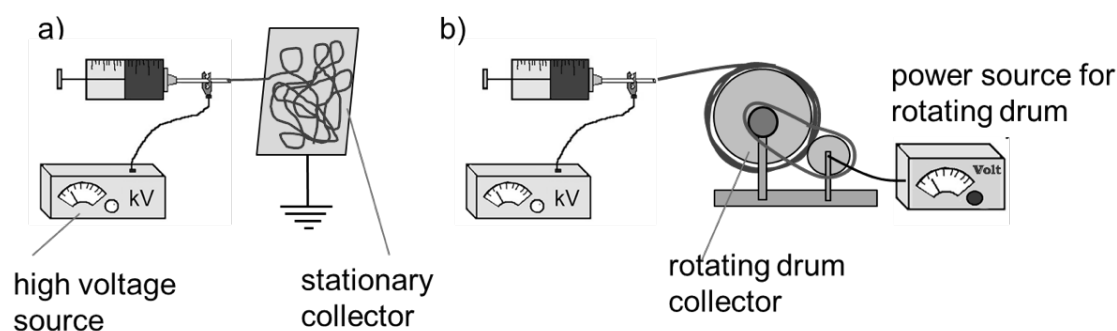
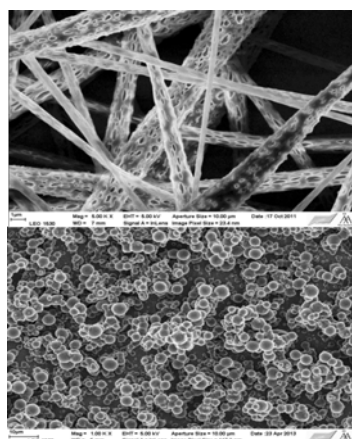
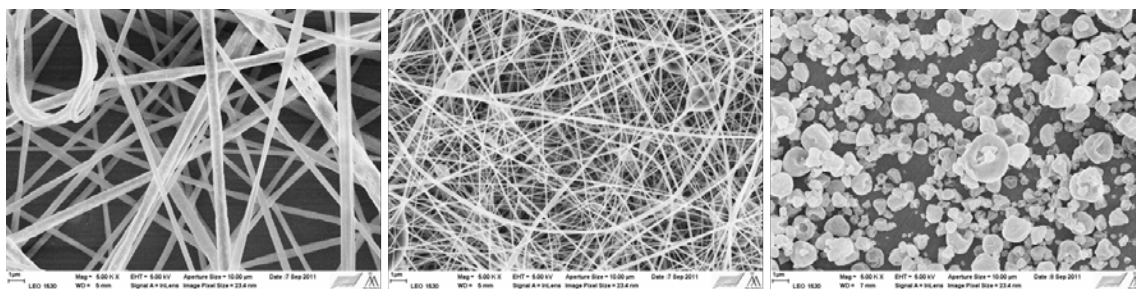




Supplementary figure 1. Schematic picture for electrospinning of a) randomly oriented fibers and b) aligned fibers



Supplementary figure 2. SEM image a) PLA fibers electrospun from the solution with 3% (w/v) PLA dissolved in only chloroform. The distance between the polymer droplet at the tip of the syringe and the collector plate was 20 cm, the voltage used was 15 kV and the flow rate was 0.5 mlh^{-1} . b) SEM image of PANI:DNNSA that was electrospun without any carrier polymer (20 cm / 20 kV / 0.5 mlh^{-1})



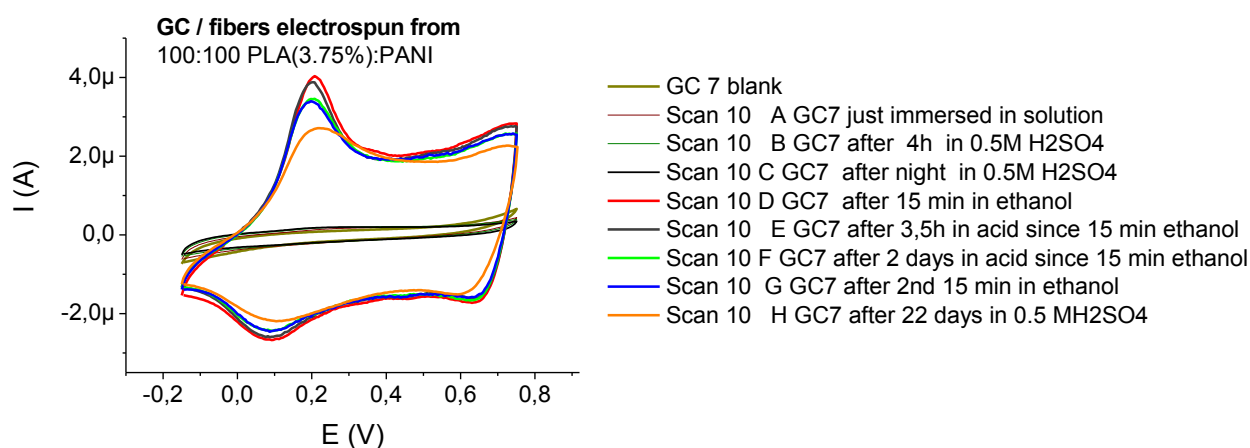
Supplementary figure 3. SEM-image (magnification 5000x) of PLA---PANI fibers electrospun a) 2 days b) 9 days and c) 57 days after blending the PLA (6% w/v) and PANI stock solutions. The distance between the needle and the tip was 12 cm, the voltage used was 12 kV and the flow rate was 0.5 mlh^{-1} . The concentration of PLA in the blend was 4.6% (w/v) and the ratio of PLA and PANI was 100:50 (w/w).

Supplementary data 4

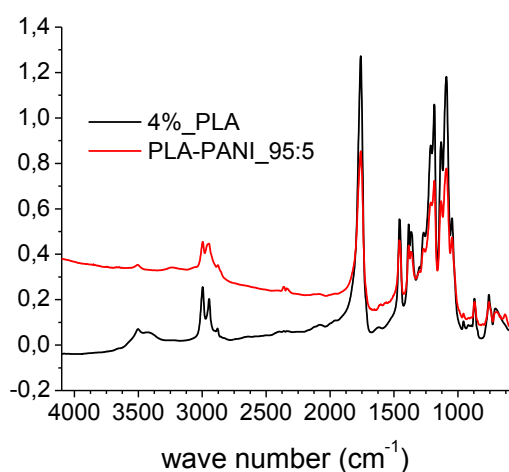
Degradation of the PLA-Pani fibers was at this stage evaluated by repeated cyclic voltammetry experiments on fibers that were electrospun on glassy carbon disk electrode surface. The electrodes covered with fibers were continuously stored in 0.5 M sulfuric acid. Supplementary figure 4 shows cyclic voltammograms (CV) recorded for fibers electrospun on glassy carbon (GC) disk electrodes from 100:100 PLA:PANI solution, where the concentration of PLA was 3.75% (w/v). All CVs shown in the figure are recorded in 0.5 M H_2SO_4 . The CVs were recorded after initial contact of fibers to the electrolyte (A=just immersed to 0.5 M H_2SO_4 , B=after 4 h in 0.5 M H_2SO_4 , C=after night in 0.5 M H_2SO_4). The electroactivity of the fibers is increased dramatically upon 15 min immersion in ethanol (curve D), as could be expected [Kinlen et al. 1998, Macromolecules]. After this, the electroactivity decreases slowly, as can be seen from the current peaks at 0.2 V (vs. Ag/AgCl/3MKCl). Curve E is recorded after 3.5 h and curve F after 2 days in 0.5 M H_2SO_4 , after the treatment with ethanol. Curve G is recorded in 0.5 M H_2SO_4 directly after repeated treatment with ethanol (15 min immersion), and curve H after 22 days in 0.5 M H_2SO_4 . Taken together the data demonstrate that the electroactivity of the fibers on electrodes in 0.5 M H_2SO_4 medium decreases slowly with time. A CV typical for polyaniline is

clearly visible still after 22 days of conditioning in 0.5 M H_2SO_4 which demonstrates that the PANI brought to the surface of GC electrodes is still there. Further studies are required to elucidate if the decrease in electroactivity results from degradation of PLA and possible consequent escape of PANI from the vicinity of the electrode or due to conversion of part of the PANI to a non-conducting form. This is an important topic for future work.

Kinlen PJ, Liu J, Ding Y, Graham CR, Remsen EE. Emulsion polymerization process for organically soluble and electrically conducting polyaniline. *Macromolecules*. 1998;31(6):1735-44.

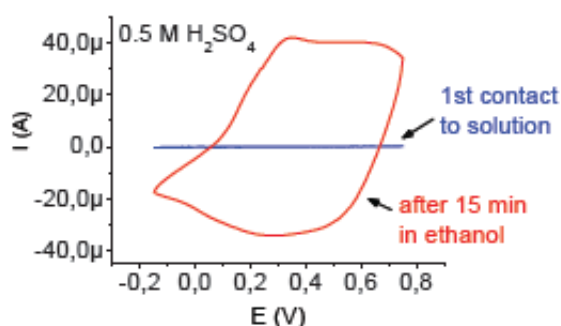


Supplementary figure 4. Degradation of PLA-PANI fibers was evaluated by repeated cyclic voltammetry experiments on fibers that were electrospun on glassy carbon electrode surface. Cyclic voltammograms recorded for fibers electrospun on glassy carbon (GC) disk electrodes from 100:100 PLA:PANI solution, where the concentration of PLA was 3.75% (w/v). All CVs shown in the figure are recorded in 0.5 M H_2SO_4 vs. Ag/AgCl/3MKCl reference electrode at 50mVs^{-1} .



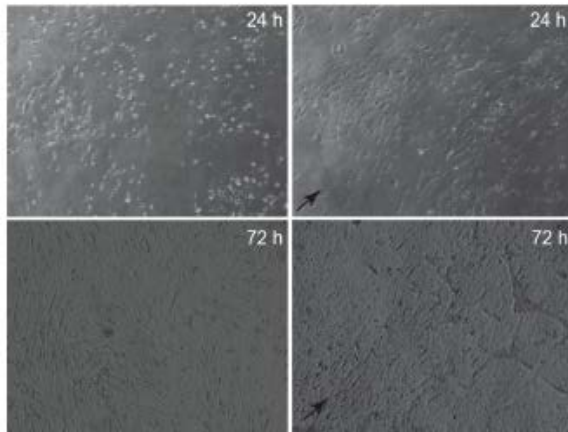
Supplementary figure 5. FTIR spectrum of pure PLA (black) and 95:5 (wt %) PLA:PANI (red). The spectras are recorded from electrospun fibers that were grinded and pressed into KBr pellets. The bands assigned to PLA are the carbonyl (-C=O) stretching around 1759 cm^{-1} and bending around 1268 cm^{-1} , (-C-C-) stretching at 926 cm^{-1} and 868 cm^{-1} , (-CH-) stretching around 2995 cm^{-1} and 2944 cm^{-1} , and (-C-O-) stretching at 1194 cm^{-1} , 1130 cm^{-1} and 1093 cm^{-1} . Also stretching around 3571 cm^{-1} and bending around 1047 cm^{-1} of the (-OH) end group is present in the spectrum. Addition of 5 % (wt) of PANI:DNNSA did not affect the position of the peaks assigned to PLA [Garlotta, 2001] in the spectrum. The FTIR spectra were carried out in the transmission mode using the Bruker IFS 66/S instrument.

Donald Garlotta, Journal of Polymers and the Environment, Vol. 9 No. 2, April 2001

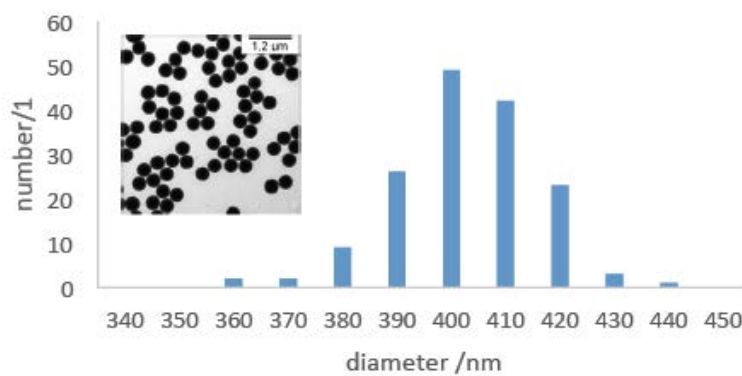


Supplementary figure 6. The conductivity of PANI:DNNSA used in this work can be increased by treatment with alcohols like methanol (Kinlen et al 1998). Fibers with different PLA-PANI ratios were electrospun on glassy carbon disk electrodes, and cyclic voltammogram was recorded in acidic conditions. Short immersion of the fibers in ethanol was found to increase their electroactivity dramatically, while the morphology of the fibrous scaffold was preserved (confirmed by SEM analysis). The electroactivity of the ethanol-treated fibers decreased when they were immersed in neutral medium, as is typical for polyaniline since it is conducting in its protonated form. Cyclic voltammograms of PLA-PANI fibers on glassy carbon electrode substrate before and after their immersion in ethanol. Fibers used for the CV shown in the graph were electrospun from 100:200 PLA---PANI solution, where concentration of PLA was 3% (w/v). A conventional Ag/AgCl/3M KCl electrode was used as the reference.

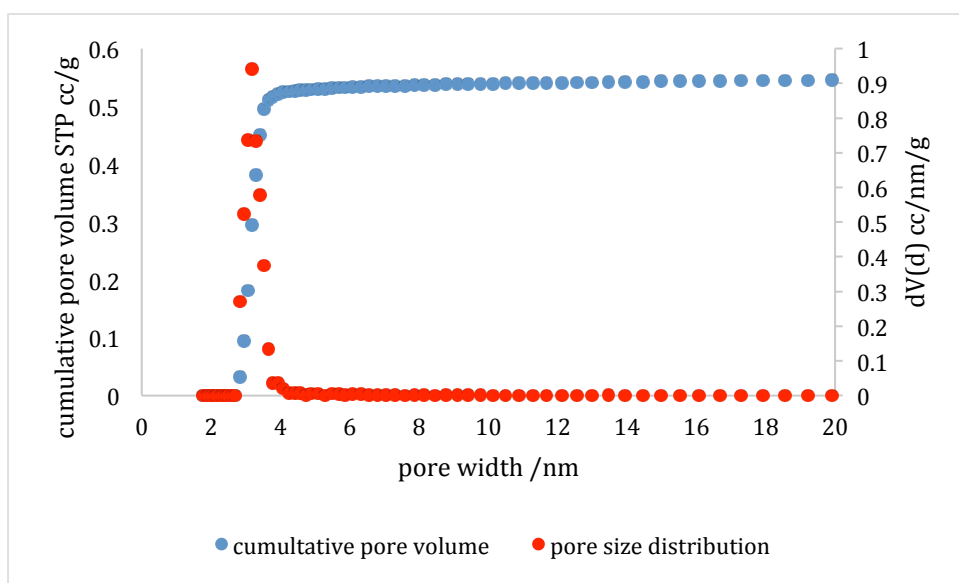
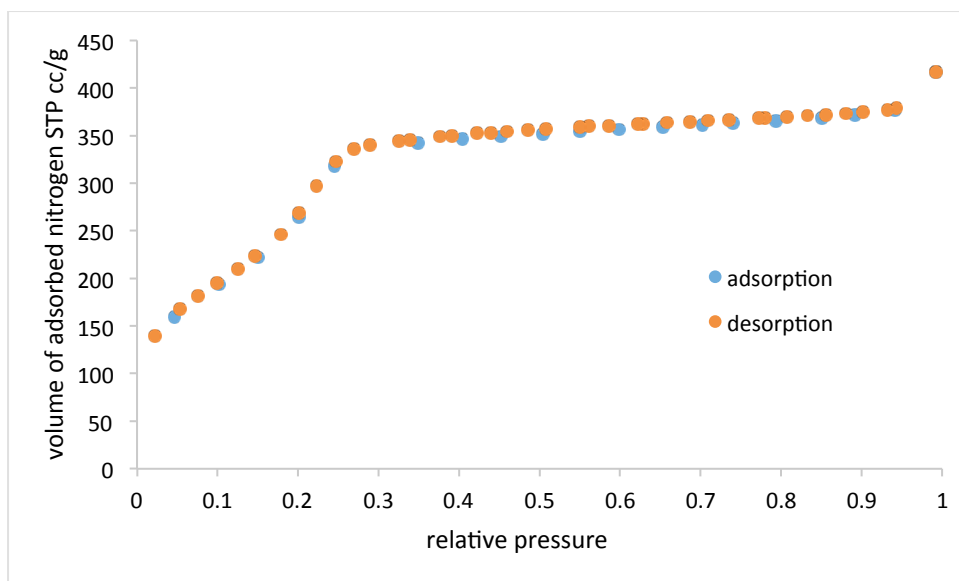
Kinlen PJ, Liu J, Ding Y, Graham CR, Remsen EE. Emulsion polymerization process for organically soluble and electrically conducting polyaniline. *Macromolecules*. 1998;31(6):1735-44.



Supplementary figure 7. Light microscopy images of C2C12 cells cultured on random left or aligned right PLA-PANI fibers at 24 h after seeding and 72 h after induced differentiation. The arrows denote the orientation of the fibers.



Supplementary figure 8. TEM-image and histogram of the diameter of mesoporous silica nanoparticles



Supplementary figure 9. Nitrogen sorption isotherm measured at 77 K for the used mesoporous silica nanoparticles and the corresponding NLDFT pore size distribution curve

