Supporting Info

Fluorescent Si QD Decoration onto Flexible Polymeric Electrospun Nanofibrous Mat for Colorimetric Sensing of TNT

Osman Arslan[1*] Zeynep Aytac[2], Tamer Uyar[1,2*]

[1] UNAM-National Nanotechnology Research Center, Bilkent University, 06800, Ankara, Turkey

[2] Institute of Materials Science & Nanotechnology, Bilkent University, Ankara, 06800, Turkey

*Corresponding authors: T.U. uyar@unam.bilkent.edu.tr , O.A. arslan@unam.bilkent.edu.tr
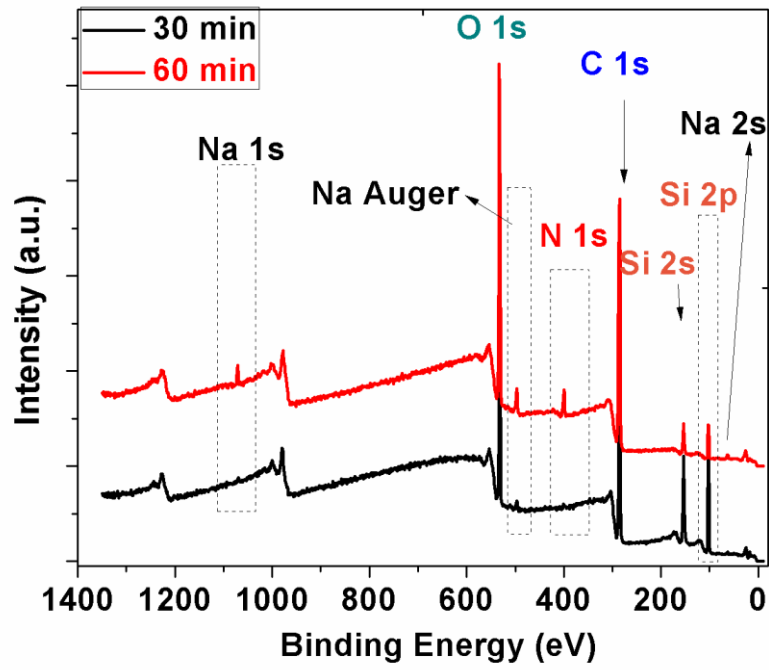
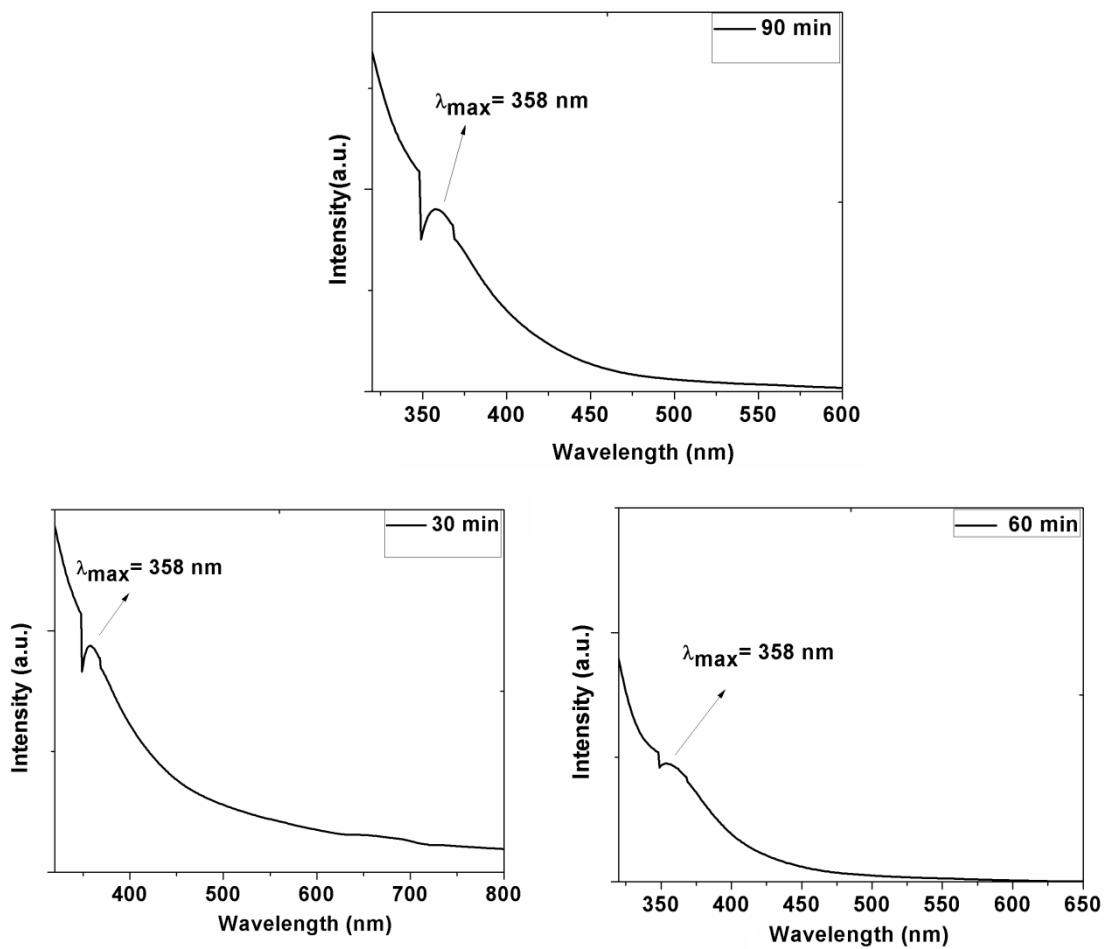Figure S1 : XPS survey analysis of the Si QD-30 and Si QD-60 samples.

Figure S2 : UV absorption features of the fluorescent Si QD after 30, 60 and 90 minutes UV treatment.
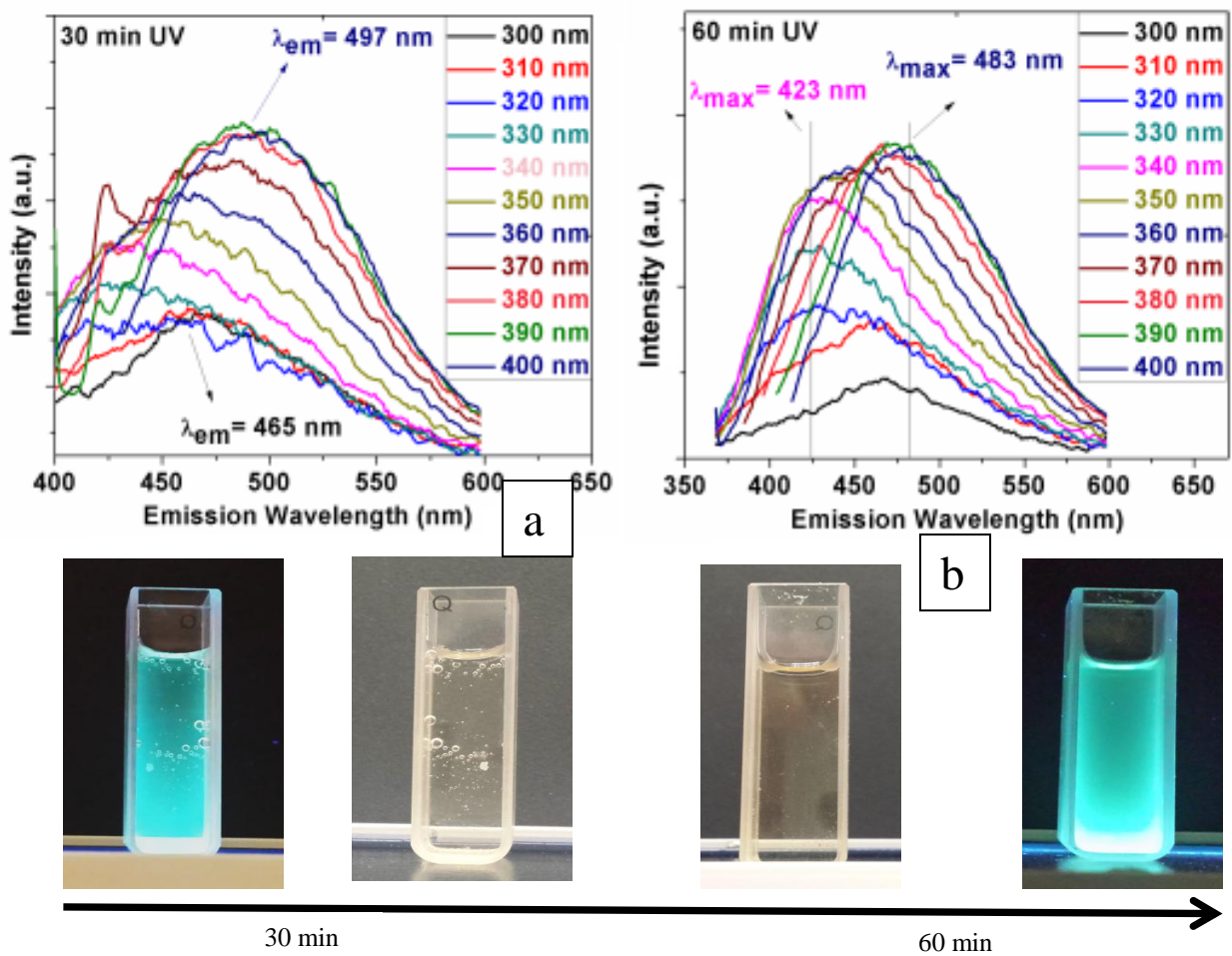
Figure S3: PL of the Si QD after a) 30 minutes and after b) 60 minutes UV treatment with different excitation wavelengths and their corresponding visible light emissions under UV excitation
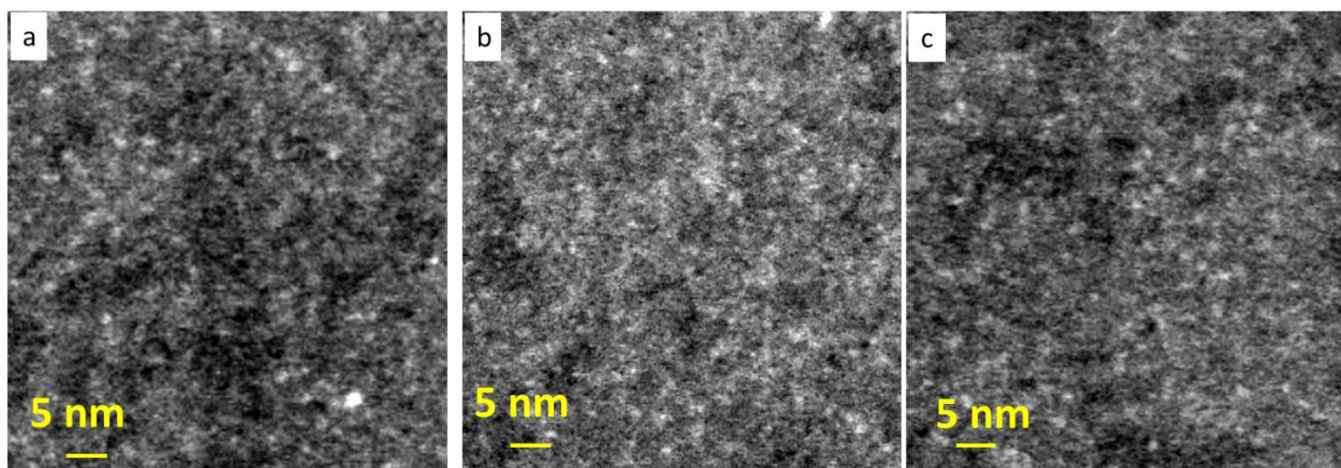
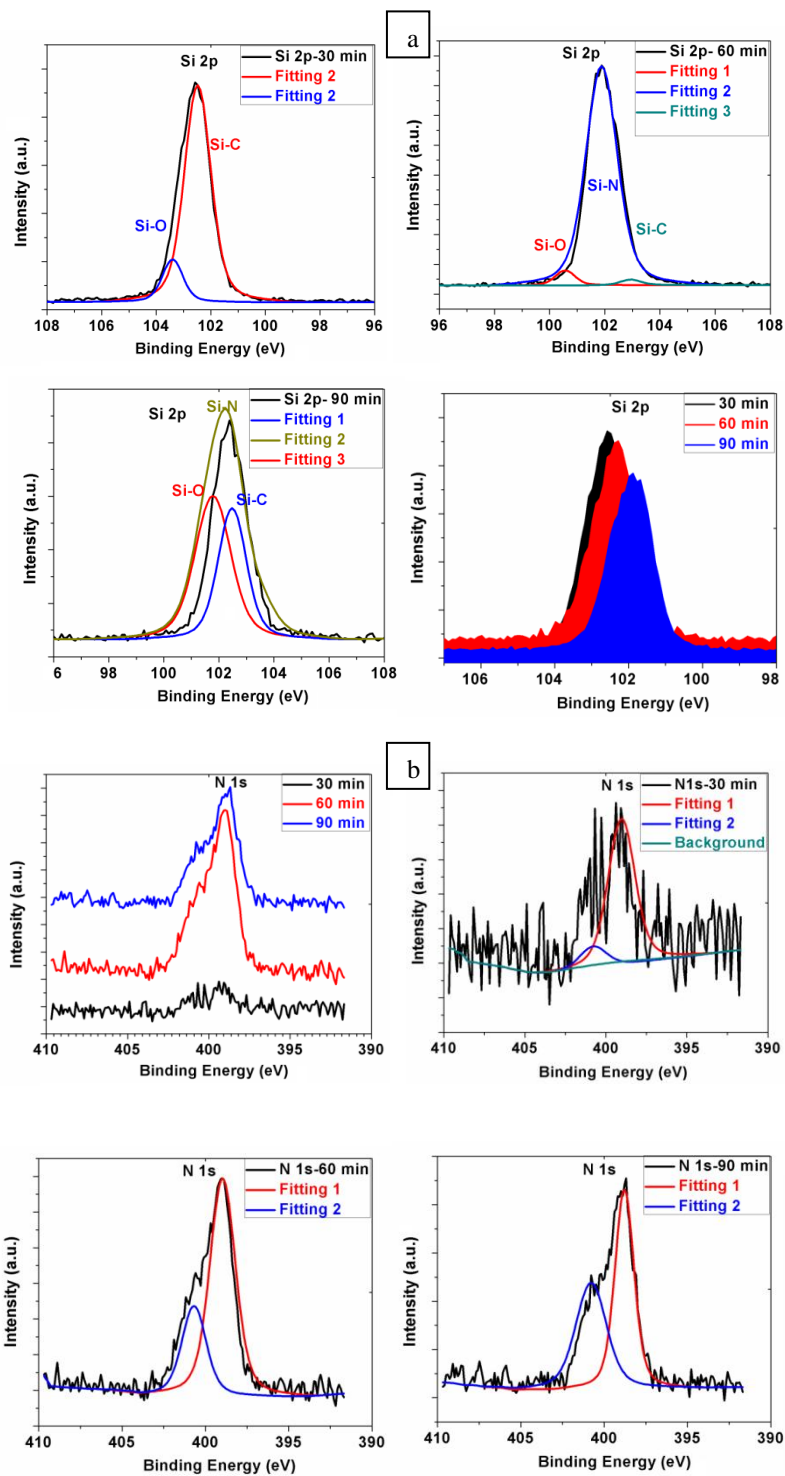Figure S4: a) Representative STEM images of the a) Si QD-90 b) Si QD-30 and c) Si QD-60.

Figure S5 : High resolution XPS analysis of the a) Si 2p peaks for and b) N 1s peaks.
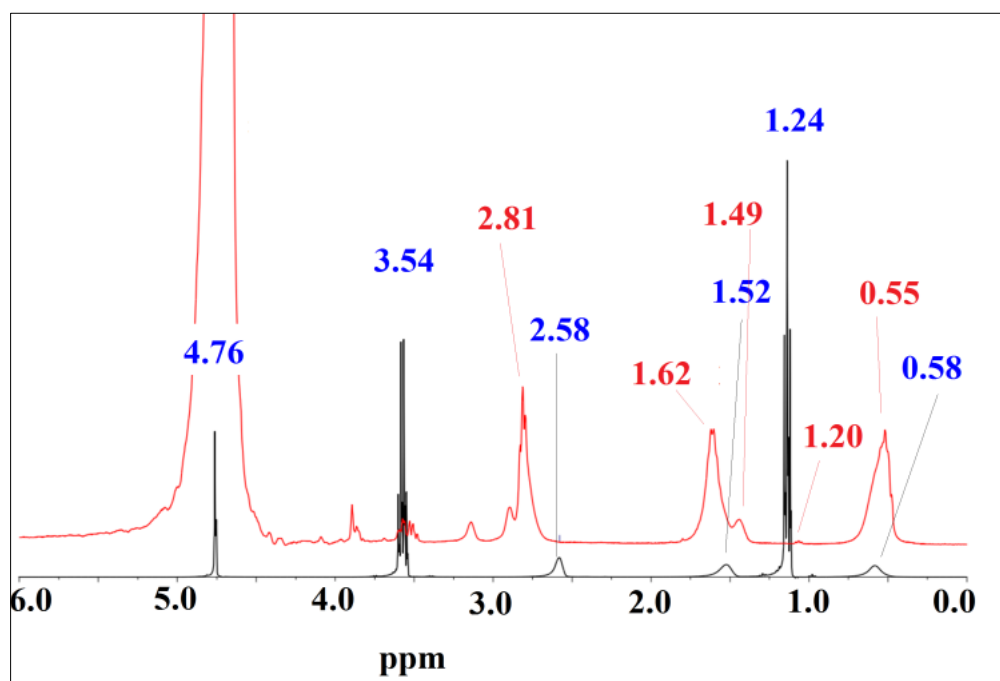
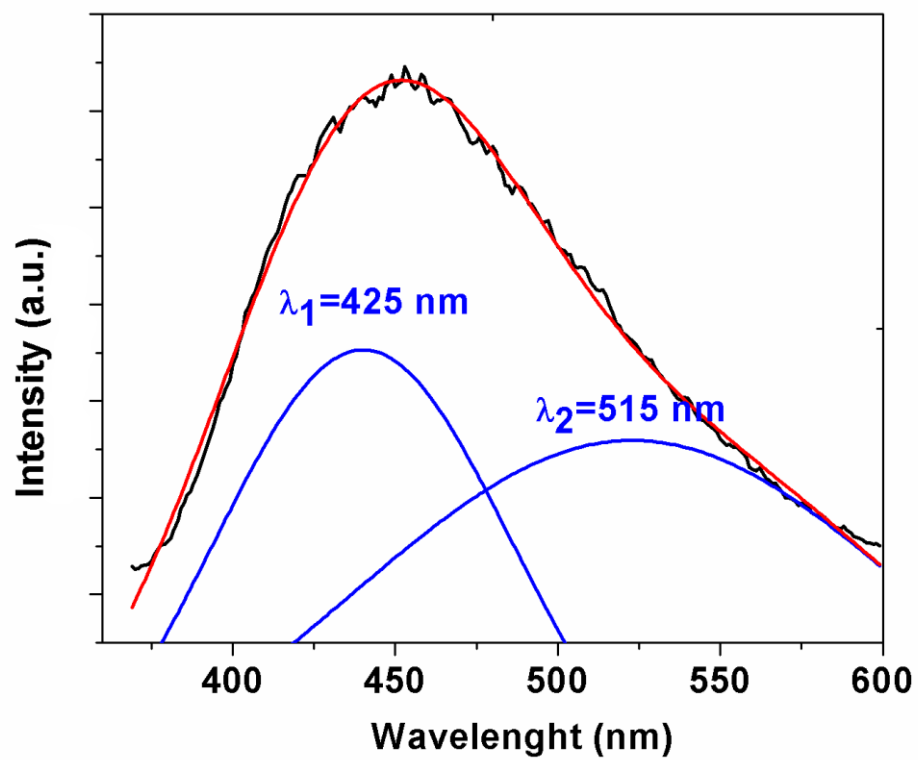Figure S6: ^{1}H-NMR spectrum for the 90 minutes UV treated Si QD to detect their surface characteristics.

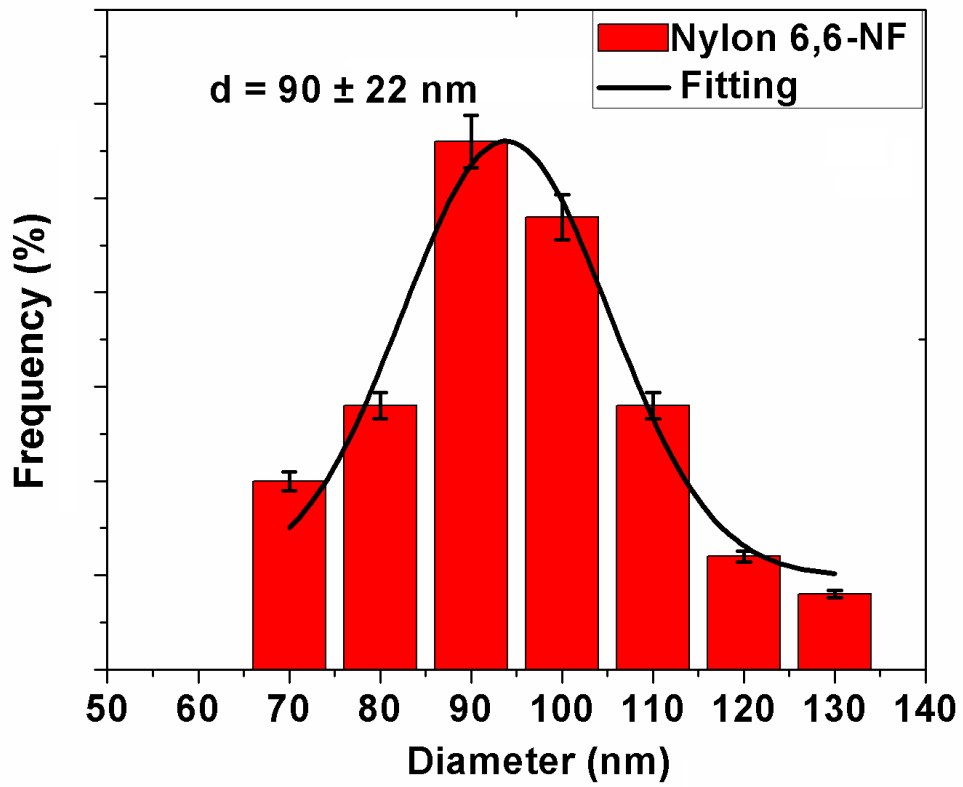Figure S7 : Deconvolution of the fluorescence peak for detecting the surface and size effects of the Si QD.

Figure S8 : Diameter distribution of the electrospun Nylon 6,6 nanofibrous mat.
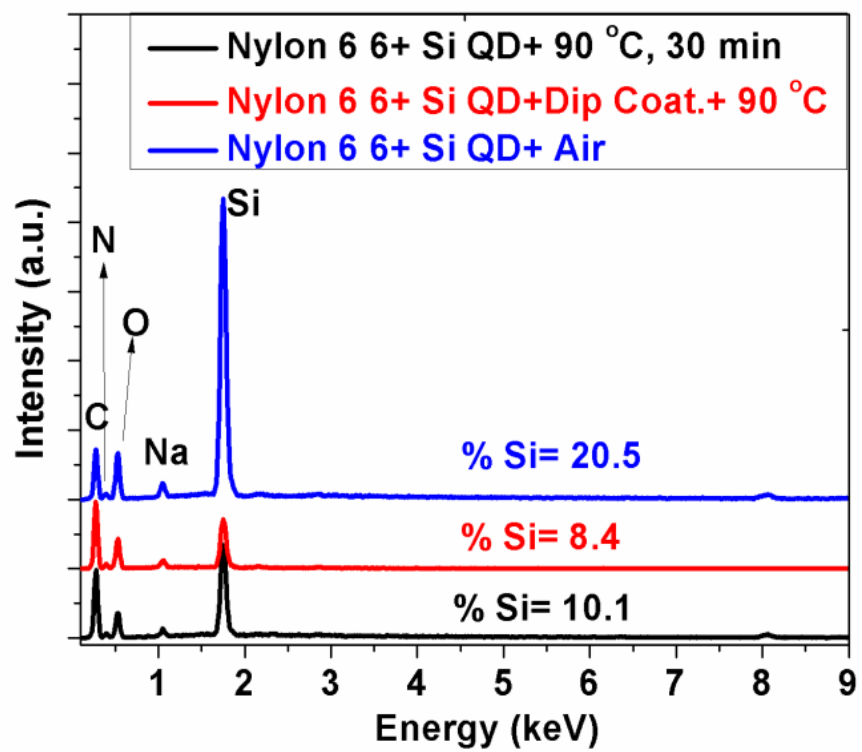
Figure S**9** : Quantitative EDX analysis of the three different decoration and curing technique.
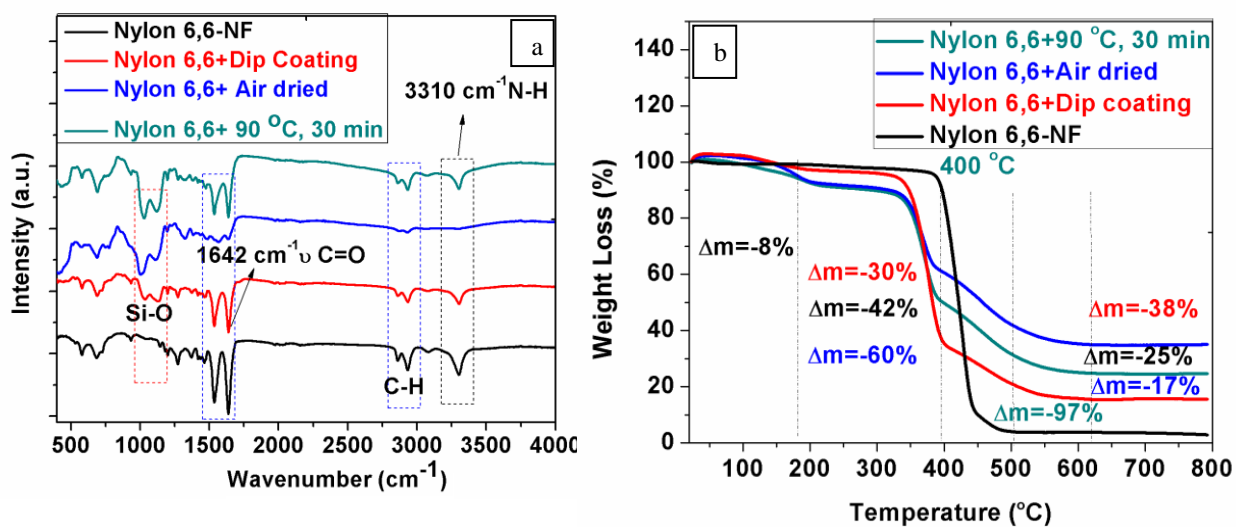
Figure S10 : FT-IR analysis and comparison for the Si QD-90 decoration onto the Nylon 6,6-NF by impregnation and dip coating processes b) thermal analysis of the Si QD-90 decoration onto the Nylon 6,6-NF by impregnation and dip coating processes
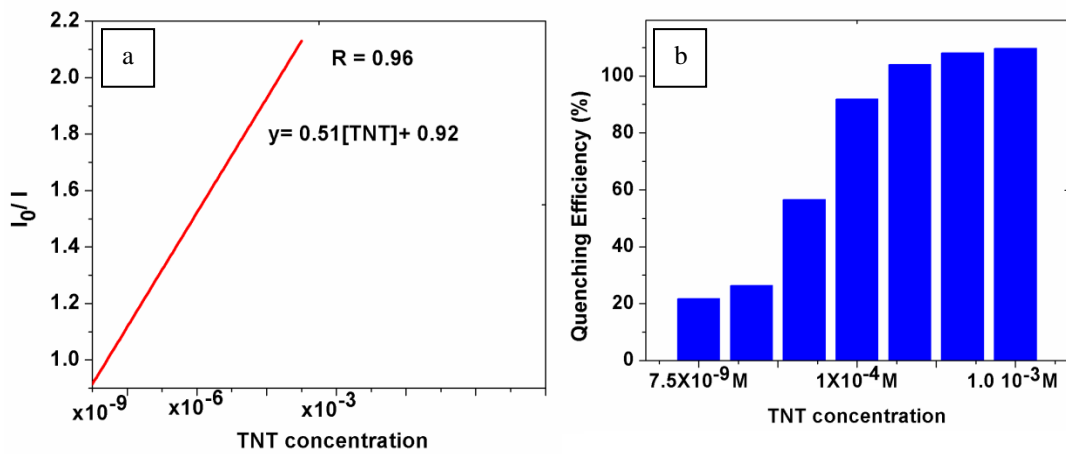
Figure S11 : Stern-Volmer plot for the different concentrations of the TNT b) Comparison for the quenching efficiencies.
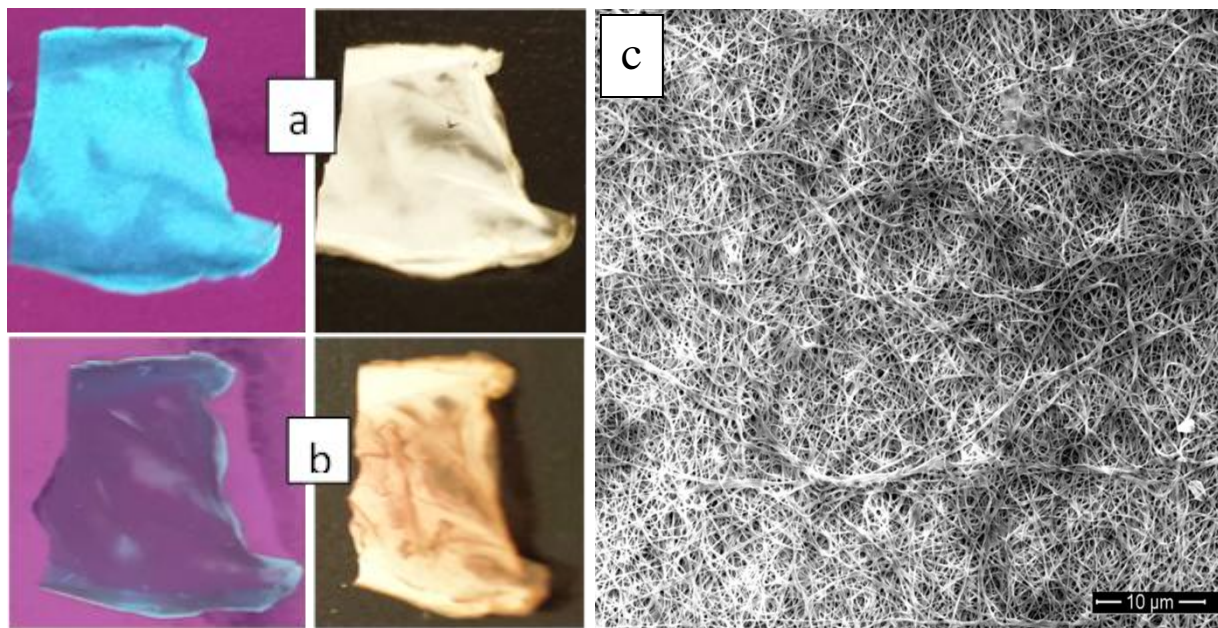
Figure S12: a-b) Visual appearance of the dip coated Si QD-90 deposited nanofibrous mat under UV light and visible light a) before TNT sensing, b) after TNT sensing, c) SEM image of the Si QD-90 decorated Nylon-6-6-NF after TNT sensing.
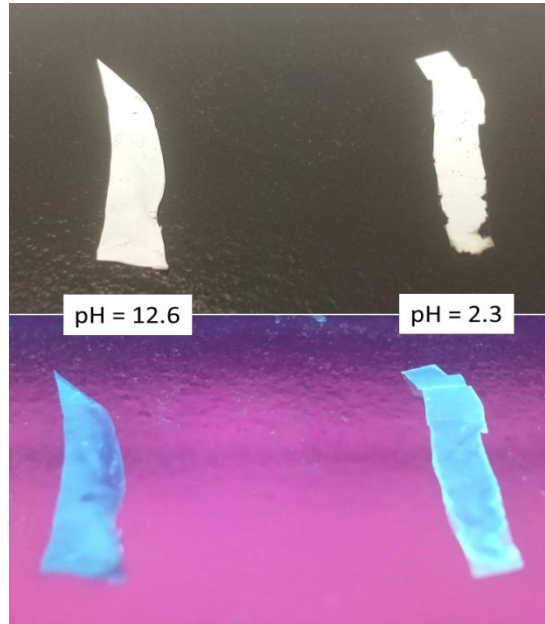
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Figure S13 : Extreme acidic and basic treatment and pH resistance of the Si QD decorated Nylon 6,6-NF. Images of Si QD decorated Nylon 6,6 nanofibrous mat under visible light (top images) and under UV light (bottom images)
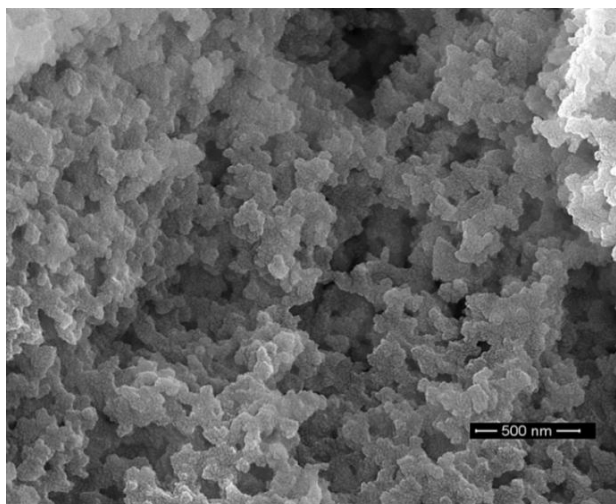
Figure S14: Representative SEM image of the Si-90 containing SiO$_2$ nanoparticles.
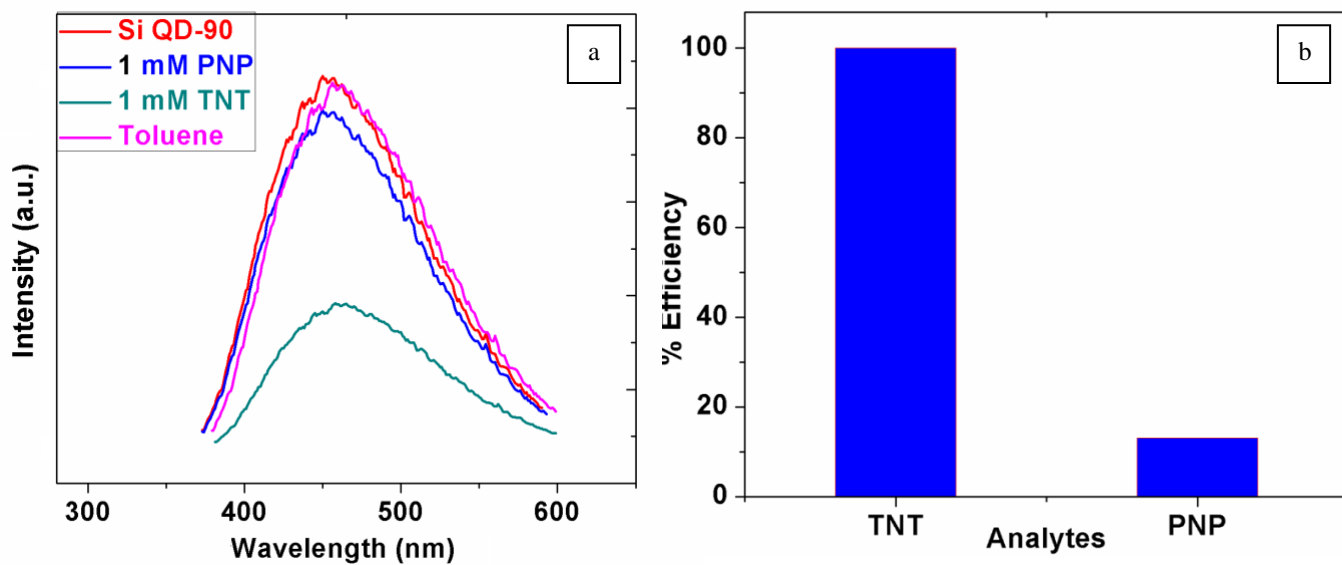
Figure S15 : a) PL quenching comparison for the PNP, TNT and pure toluene b) Comparison of the sensing efficiencies tested with TNT, para nitro toluene (PNP)