

UV cross-linked polyvinylpyrrolidone electrospun fibres as antibacterial surfaces

– Supporting Information

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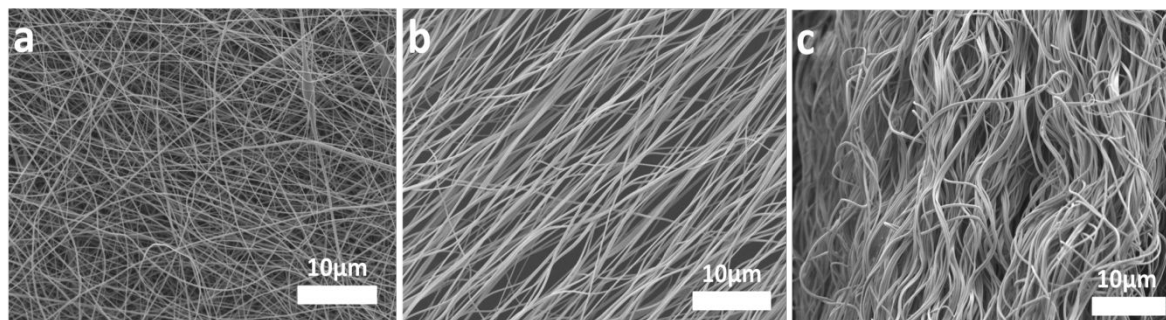


Figure ESI 1: SEM micrographs of mats fabricated from (a) 13, (b) 15 and (c) 17 wt% of PVP water solution.

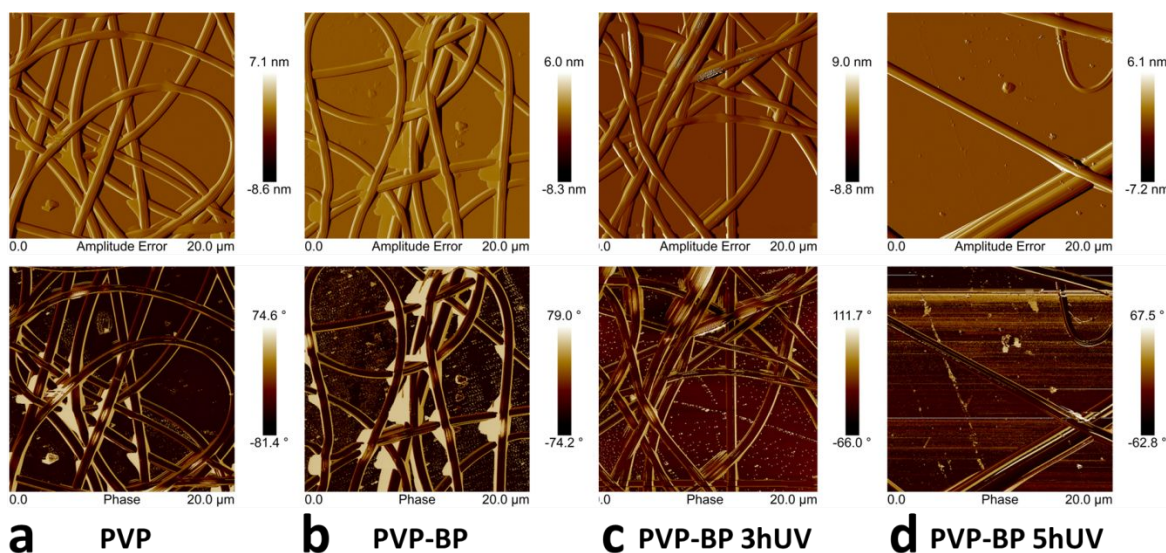


Figure ESI 2: Tapping AFM images of obtained PVP fibers (a) control (b), with 2 wt% BP (c), 2 wt% BP after 3hs and (d), 5hs of UV exposure. Top row shows amplitude error images and bottom row phase images.

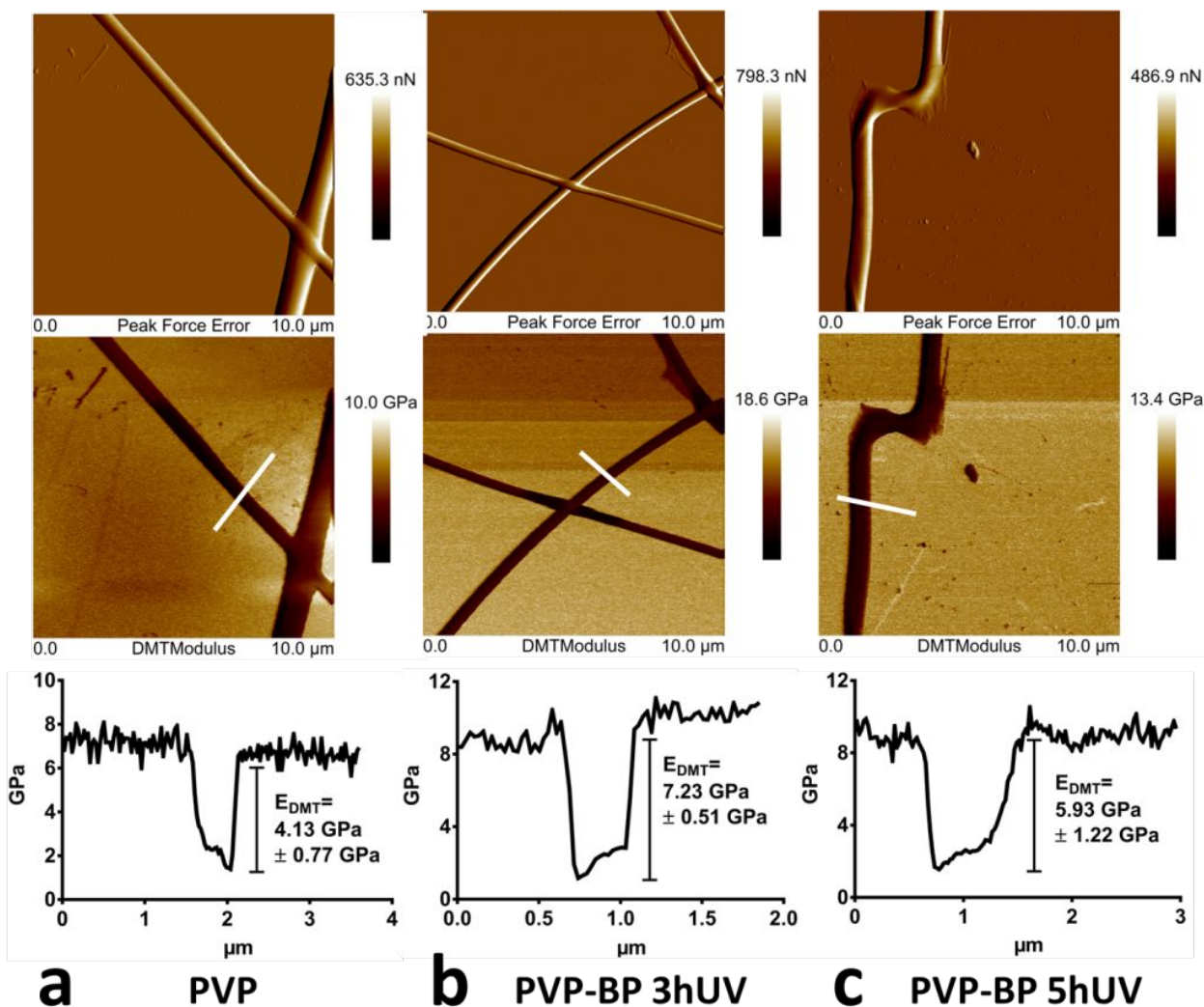
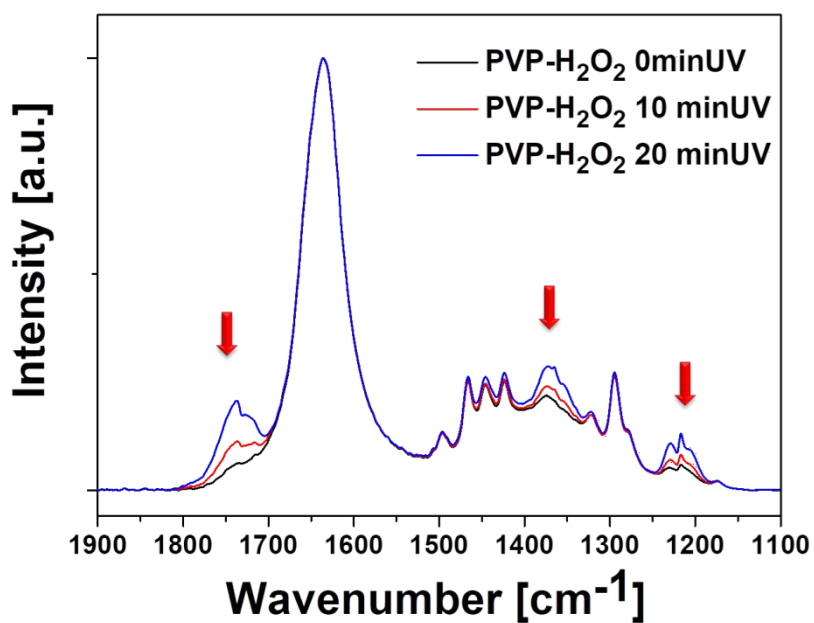
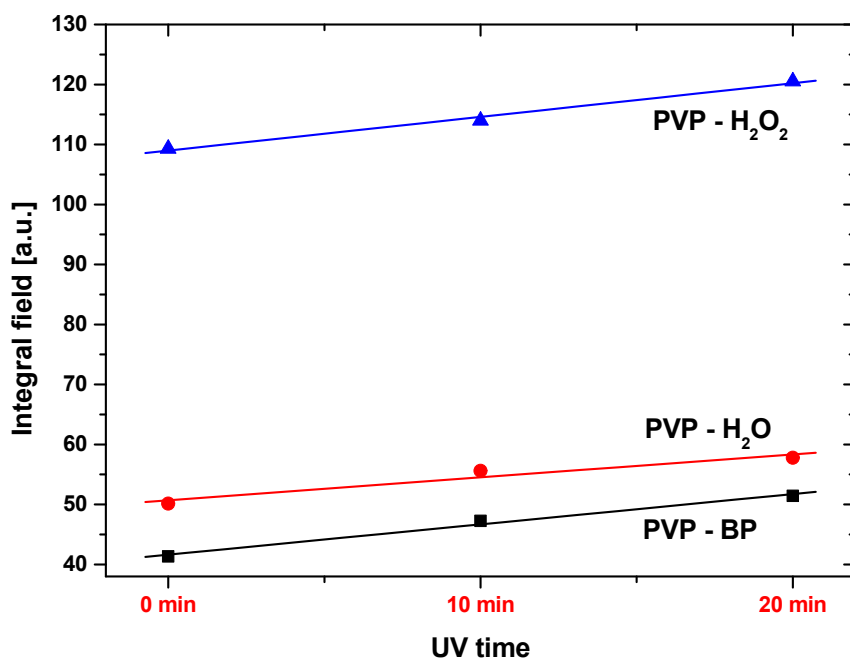


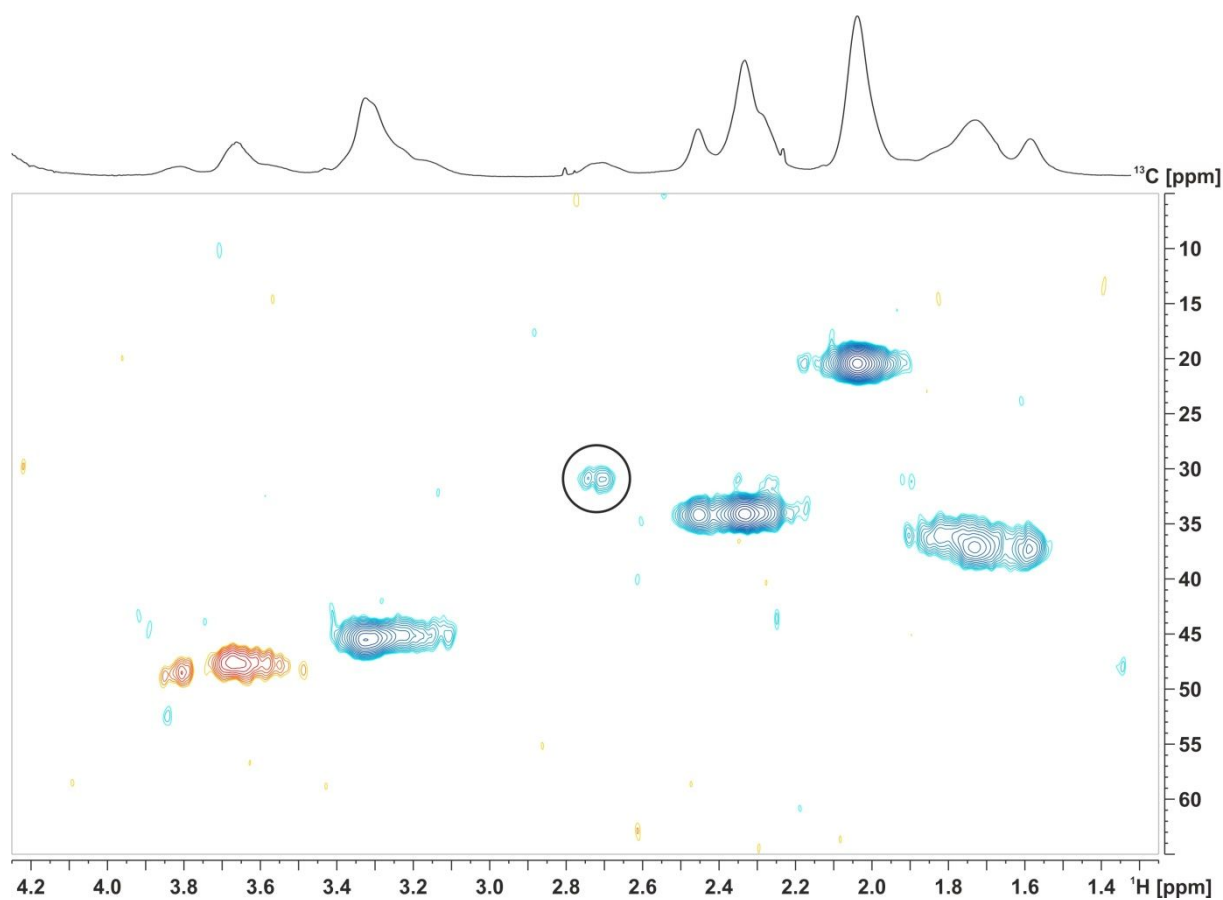
Figure ESI 3: PF-QNM AFM images of individual PVP fibres (a) control (b), 2% w/w BP after 3hs and (c), 5hs of UV exposure. Top row shows peak force error images, middle row shows DMT Modulus images and bottom row shows exemplar cross-sectional measurements of DMT modulus at the places where white line was drawn on the DMT modulus images. The average values presented in the graph ($\pm$ SD) are taken over the selection of all points along at least three fibres ($n = 3$) and referenced to the value of Si substrate, here taken as 0.



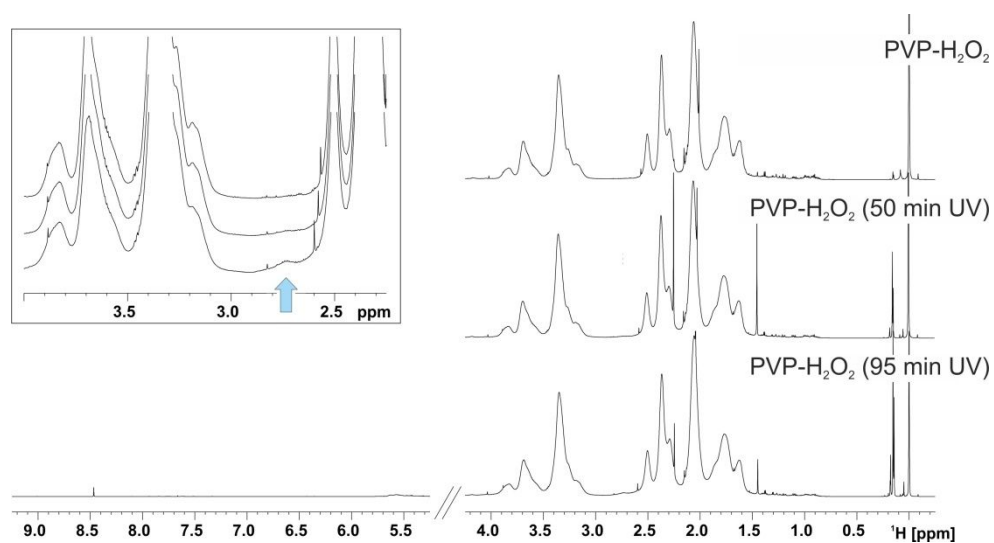
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 47 **Figure ESI 4:** Normalized (to 1634 cm^{-1}) FTIR absorption spectra obtained for the PVP-
 48 H_2O_2 under short UV irradiation times (10 and 20 minutes).



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 50 **Figure ESI 5:** The integral field of the FTIR absorption peak (between $1800\text{-}1650\text{ cm}^{-1}$) vs UV
 51 time and the linear fitting curves for PVP- H_2O_2 , PVP- H_2O , PVP-BP- H_2O .



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54 **Figure ESI 6:** ^1H - ^{13}C HSQC spectrum of PVP-BP aqueous solution (H_2O) after 3hs of UV
55 irradiation acquired at 55 °C. Circled cross-peak corresponds to coupling interactions
56 between directly bounded ^1H and ^{13}C nuclei in succinimide ring.



58 **Figure ESI 7:** ^1H NMR spectra of PVP- H_2O_2 without any UV exposure and after 50 and 95
59 min of UV exposure (800 MHz, 60 vol% H_2O /40 vol% D_2O , 25 °C). Blue arrow denotes
60 additional broad signal around 2.6 ppm assigned to the methylene protons of the succinimide
61 ring.
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