

Supporting Information

# Study on the Discoloration Phenomenon Caused by Iron Ion Oxidation in the Pad of Boston Ivy and Its Mechanism on Adhesion Force

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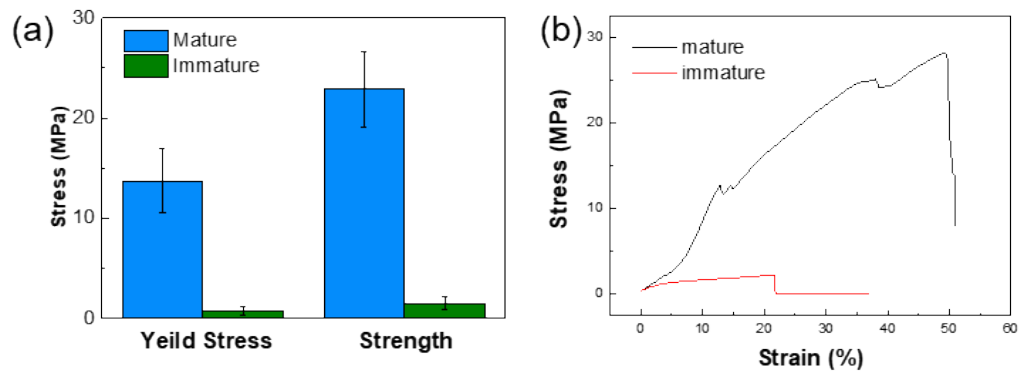


Figure S1. Tensile test results for tendrils. (a) The yield stress and strength of mature and immature tendrils. (b) Strain-Stress curve of mature and immature tendrils.

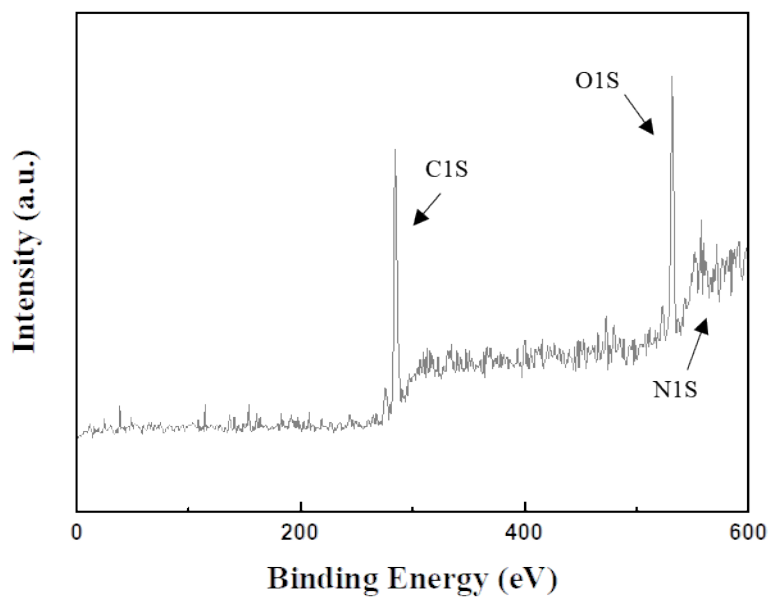


Figure S2. XPS Survey spectrum of creeper pad.



Figure S3. Colour of tendril after being removed from plant for three hours.

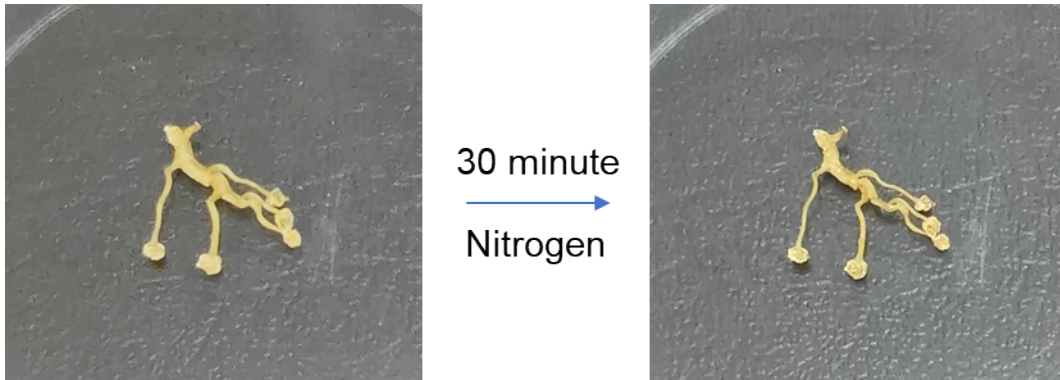


Figure S4. Colour of tendril in nitrogen after being removed from plant for three hours.

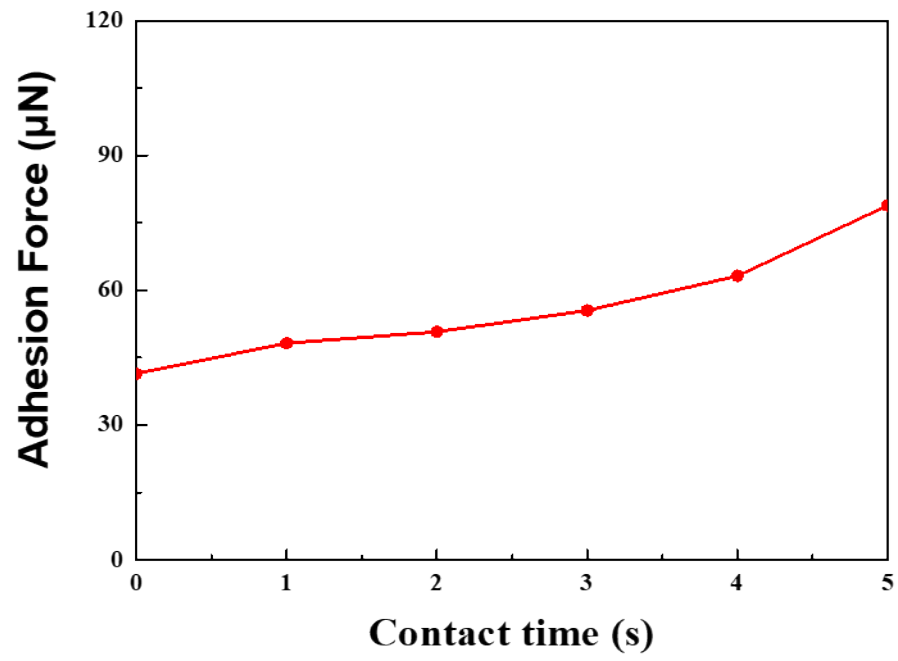


Figure S5. The adhesion of pad changes with the increase of contact time.

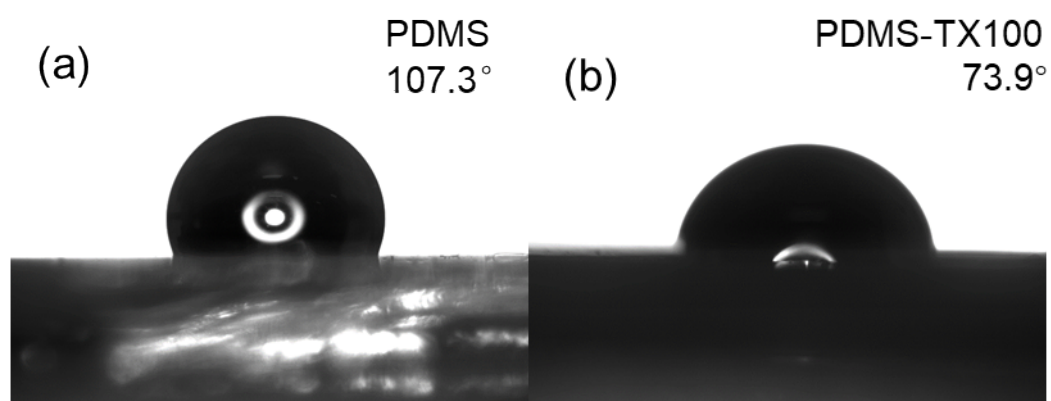


Figure S6. (a) Contact angle of water on pure PDMS, (b) Contact angle of water on PDMS doped with 3% TX-100.

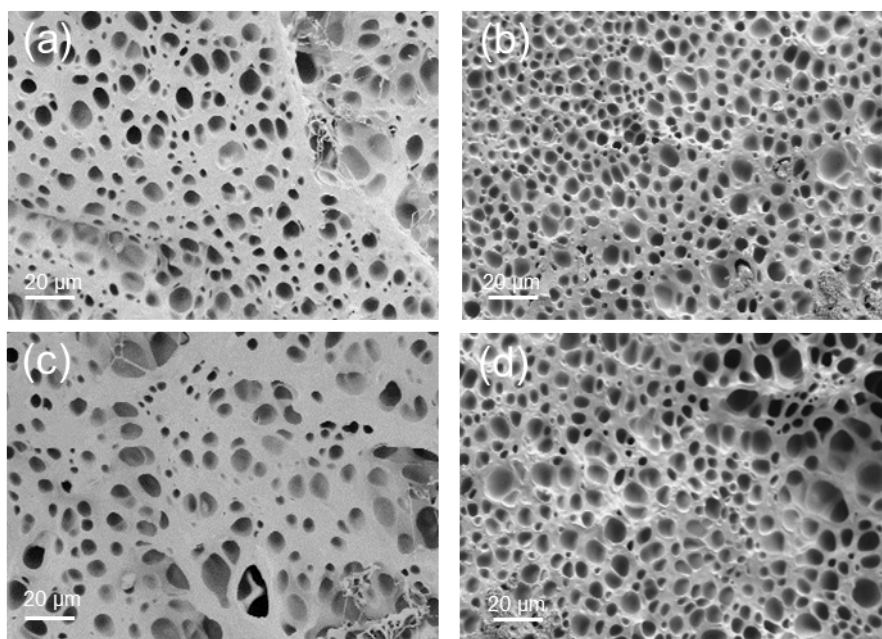


Figure S7. SEM images of yophilization hydrogels with different composition ratios, (a) TA-Fe<sup>3+</sup>-PAAAM hydrogel SEM image, (b) TA-Fe<sup>3+</sup>Fe<sup>2+</sup>-PAAAM hydrogel SEM image, (c) DA-Fe<sup>3+</sup>-PAAAM hydrogel SEM image, (d) DA-Fe<sup>3+</sup>Fe<sup>2+</sup>-PAAAM hydrogel SEM image



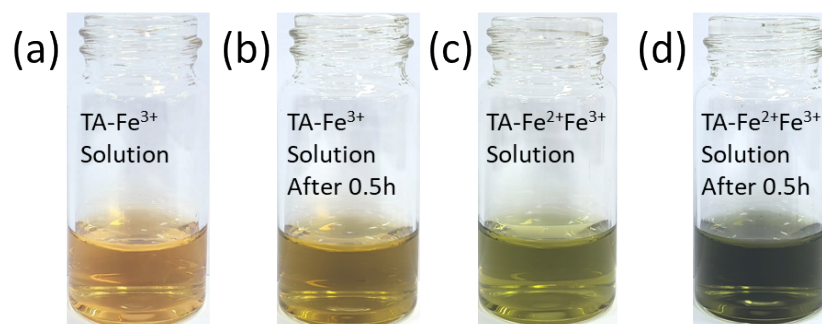


Figure S8. Optical image of TA-Fe<sup>3+</sup> pre-polymerization solution in nitrogen atmosphere (a) and in air for half an hour (b). Optical image of TA-Fe<sup>2+</sup>Fe<sup>3+</sup> pre-polymerization solution in nitrogen atmosphere (c) and in air for half an hour (d)

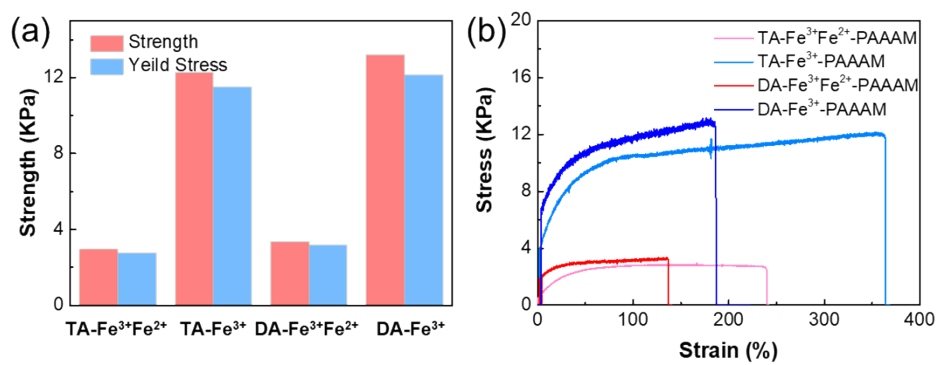


Figure S9. Tensile test results for hydrogels (a) The yield stress and strength of hydrogels with different composition, (b) Strain-Stress curve of hydrogels with different composition

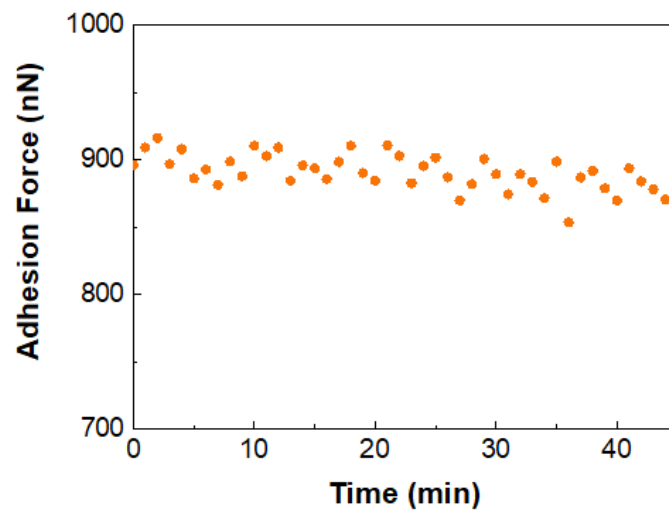


Figure S10. The relationship between the adhesion of the TA-Fe<sup>3+</sup>-PAAAM hydrogel composite surface and the time of exposure to the air.