Supplementary material

Laccase-mediated dopamine polymerization: a bioinspired and sustainable coating technology

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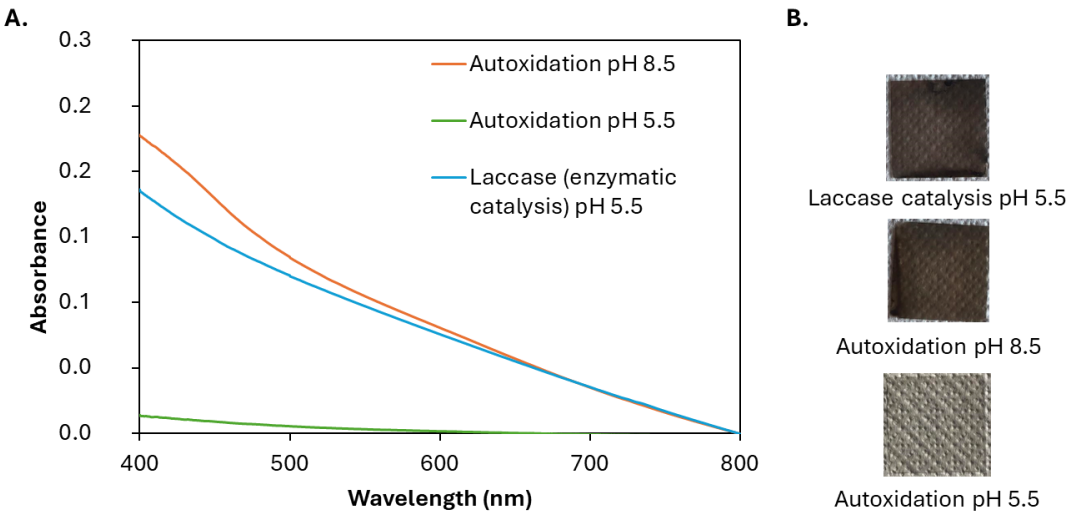

Figure S1. A. Visible absorption spectra of glass slides subjected to dip-coating for 24 h with 10 mM dopamine by autoxidation at pH 8.5 or pH 5.5 and by laccase-mediated oxidation at pH 5.5. **B.** Digital pictures of glass slides coated with PDA by the same oxidation processes.

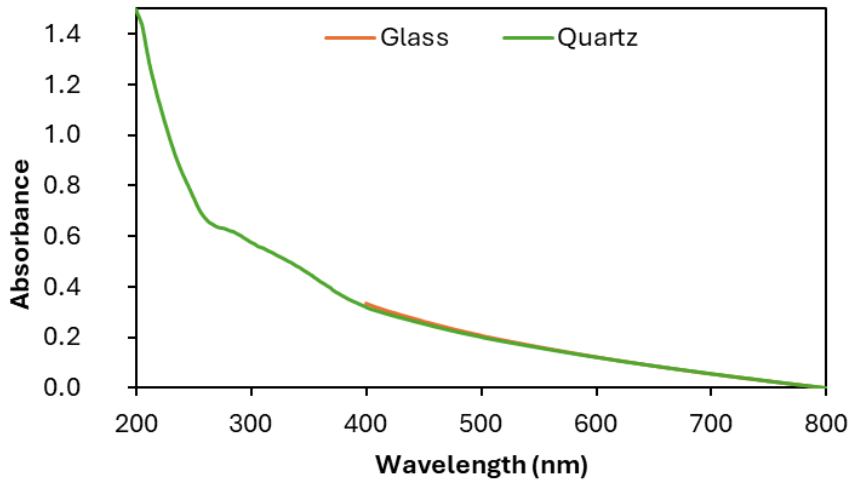

Figure S2. UV-Vis absorbance spectra of laccase-mediated PDA coated quartz and glass slides. Reaction conditions: 2.5 mM dopamine, 0.25 mg/mL laccase, pH 5.5, stirring rate 1250 rpm, 24 h. Note: glass cut-off at 350 nm.

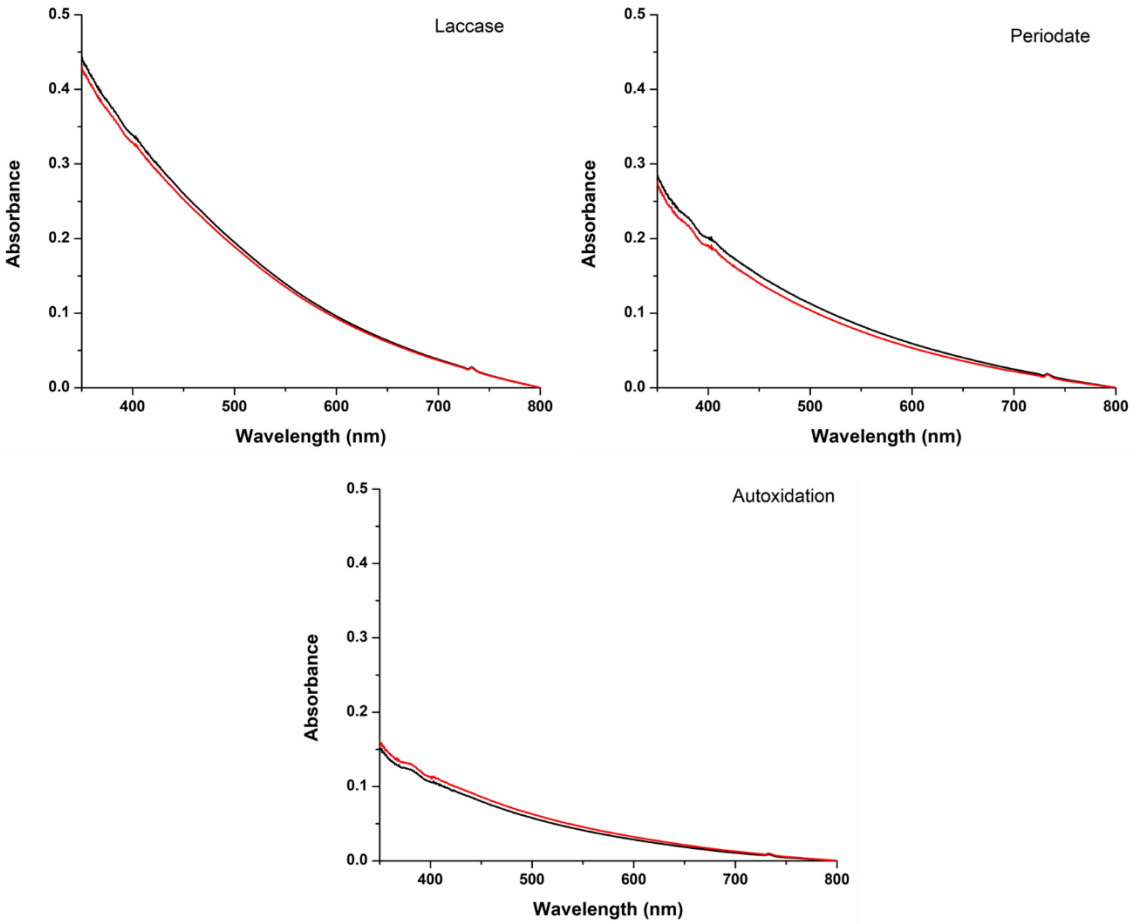

Figure S3. Visible absorption spectra of PDA coated glass slides before (black) and after (red) tape test.

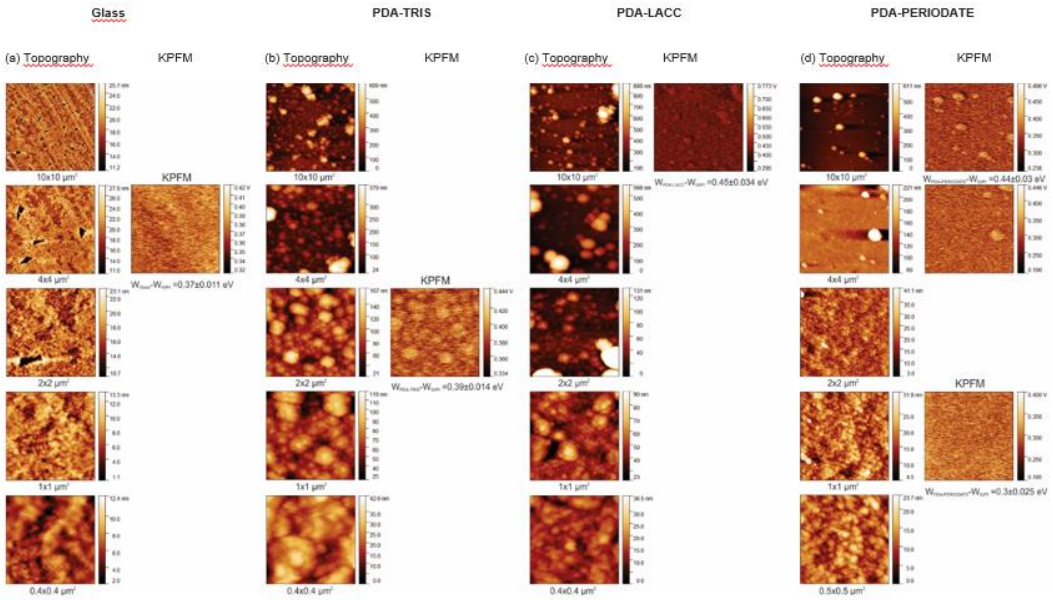

Figure S4. AFM (semi-contact mode) and KPFM (non-contact mode) images of uncoated glass slide (a) and PDA-coated glass slides obtained by dopamine autoxidation (PDA-TRIS) (b), laccase-mediated oxidation (PDA-LACC) (c) and periodate-induced oxidation (PDA-PERIODATE) (d) at different scales.

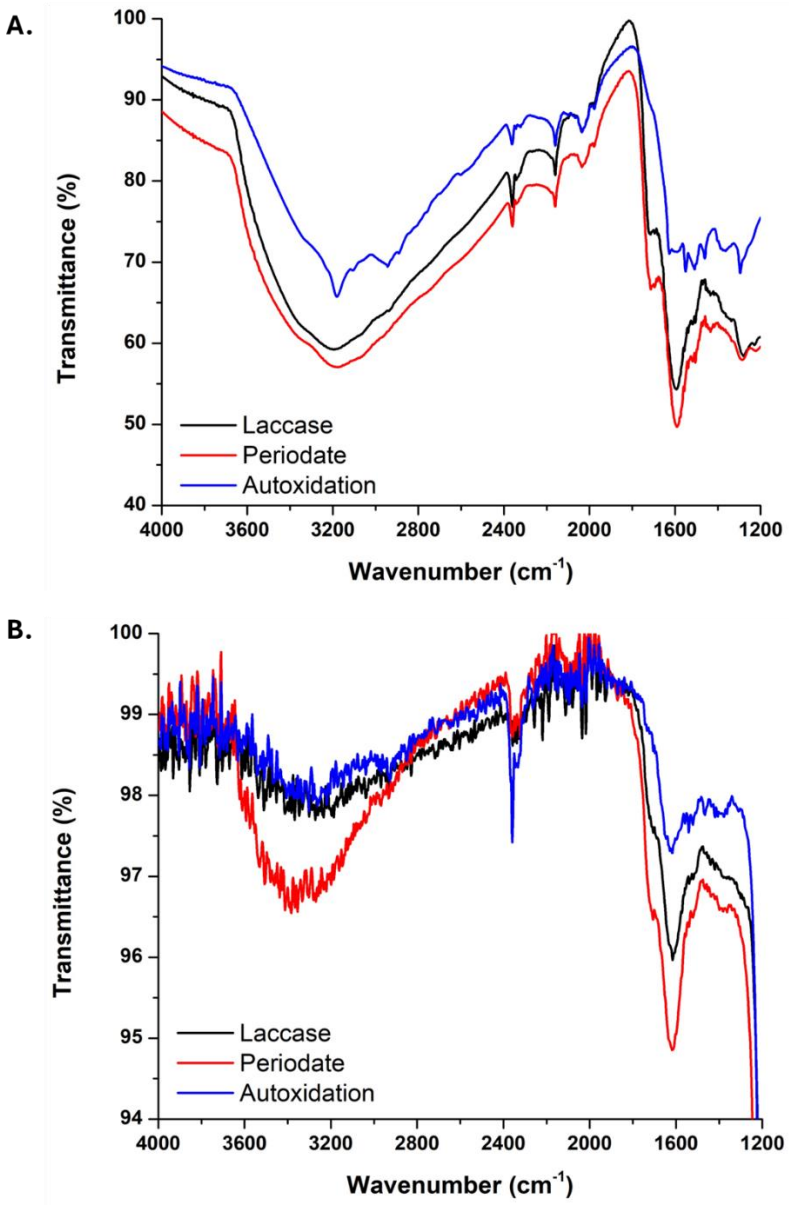

Figure S5. ATR-FTIR spectra of PDA powders (A) and PDA-coated glass slides (B).

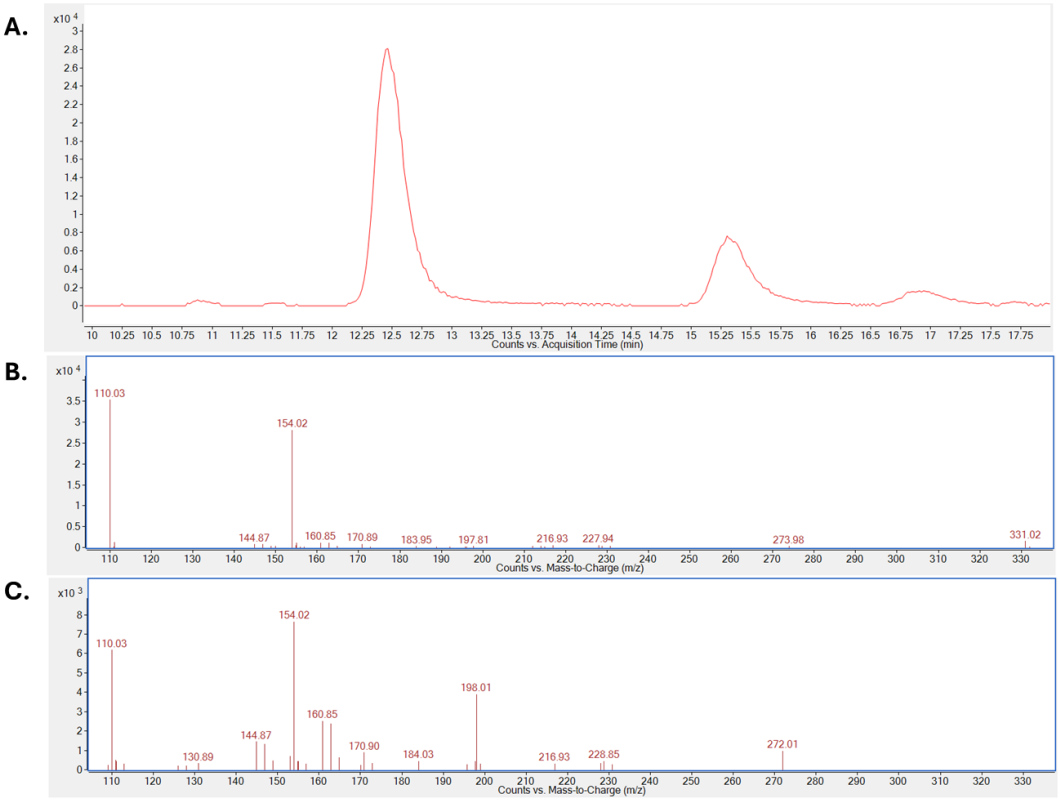

Figure S6. A. Selected region of the extracted ion chromatogram (EIC) of the alkaline hydrogen peroxide degradation mixture of PDA sample obtained in the presence of laccase. B. and C. Mass spectra of the compounds eluted at 12.5 ($[M-H]^-$ = *m/z* 154) (PDCA) and 15.3 ($[M-H]^-$ = *m/z* 198) min (PTCA), respectively.

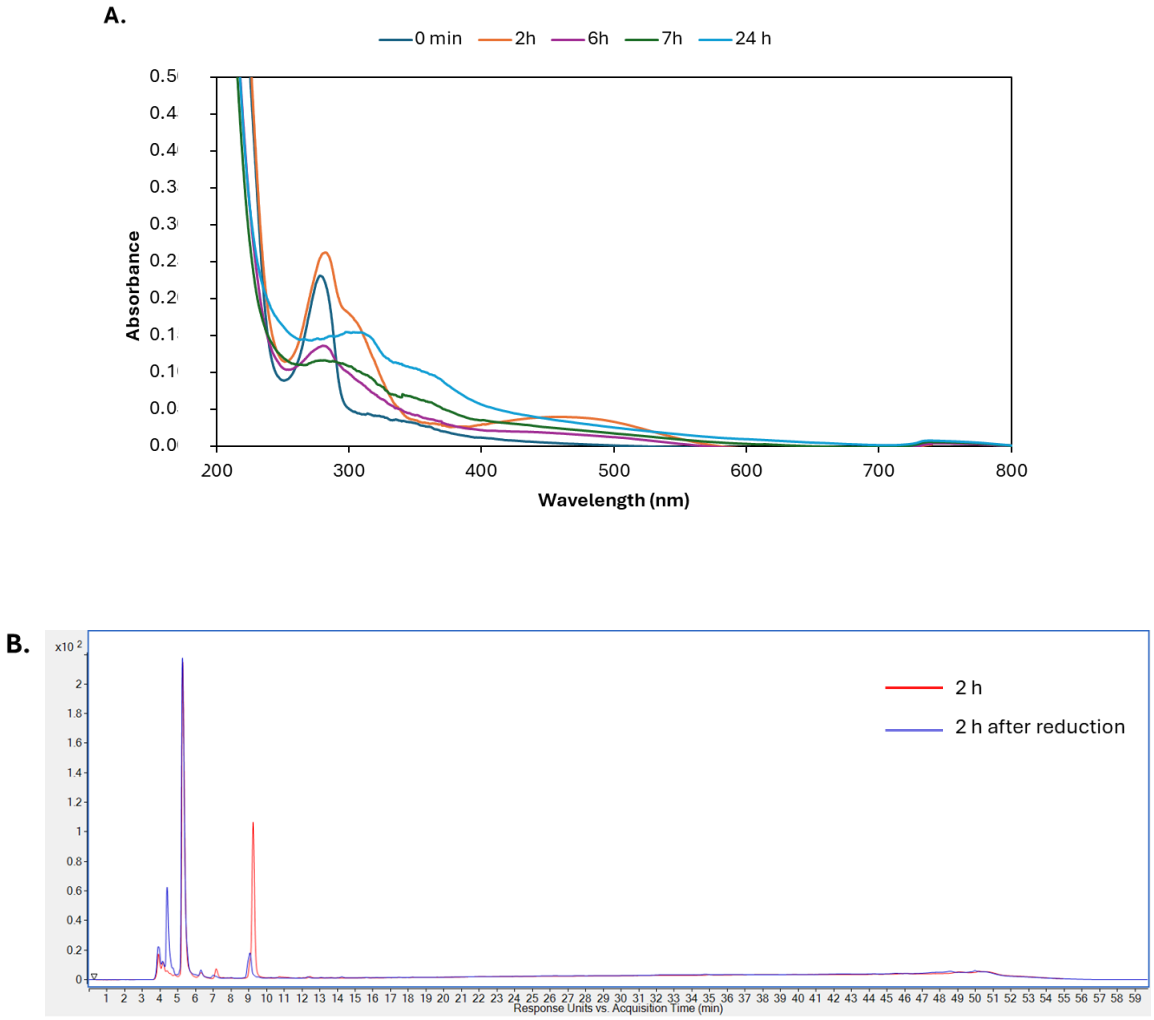

Figure S7. UV-Vis spectra at different times (A) and chromatographic profile (B) at 2 h before and after reduction of the reaction mixture of dopamine (2.5 mM initial concentration) with 0.25 mg/mL laccase at pH 5.5 (stirring rate 1250 rpm).