

A paper-based chromogenic strip and electrochemical sensor for the detection of 4-(dimethylamino)azobenzene

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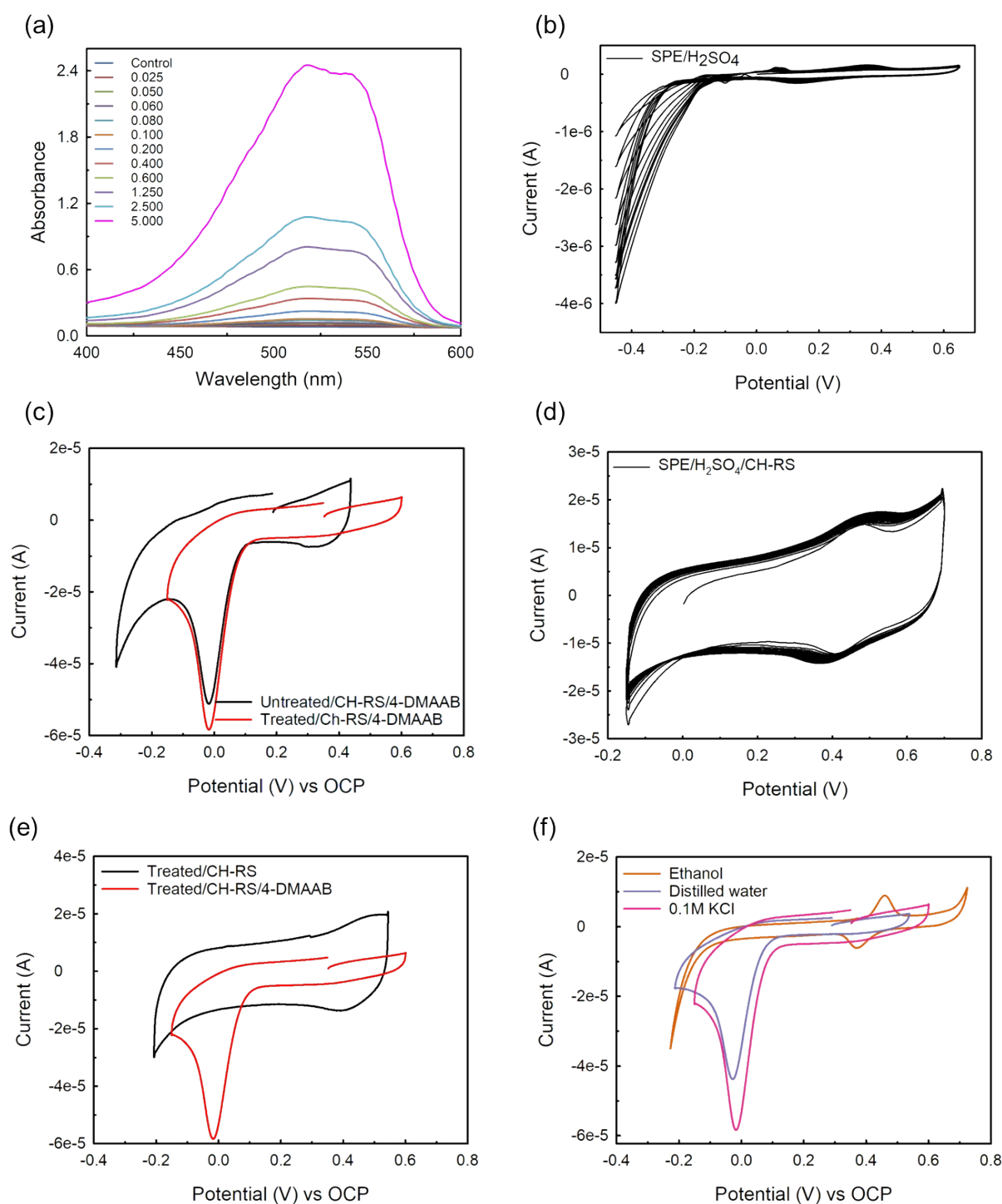
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S. No.	Existing methods for the detection of 4-DMAAB	Detection limit	Ref.
1	NIR spectroscopy	-	1
2	Surface-enhanced Raman spectroscopy	-	2
3	Present study (Electrochemical sensor)	0.027 ± 0.008 mM	-
4	Present study (Paper-based colorimetric sensor)	0.025 mM	-

Supplementary Table 1: Efficiency assessment of the developed sensors and previously reported methods for detection of 4-DMAAB



Supplementary Figure 1: (a) Wavelength scan of 4-DMAAB (0.025-5 mM) with recognition solution (RS); (b) Cyclic voltammogram for pre-treatment of SPCE with 1M H₂SO₄; (c) Response of 4-DMAAB on non-treated and treated SPCE showing shift in Ep value and increase in Ip; (d) Electrodeposition of recognition solution and chitosan on pre-treated SPCE; (e) Response of 4-DMAAB on treated SPCE showing distinct peak at Ep -0.035 V; (f) Response of 4-DMAAB in different electrolyte solutions viz, distilled water, ethanol and 0.1 M KCl.

1. R. Amsaraj and S. Mutturi, *Infrared Physics & Technology*, 2023, **129**, 104543.
2. Z. L. Zhang, Y. F. Yin, J. W. Jiang and Y. J. Mo, *Journal of Molecular Structure*, 2009, **920**, 297-300.