Electronic Supplementary Material (ESI) for Green Chemistry.

Eco-friendly Electro-catalytic Oxidation of Alcohols on a Novel Electro-Generated TEMPO-Functionalized MCM-41 Modified Electrode

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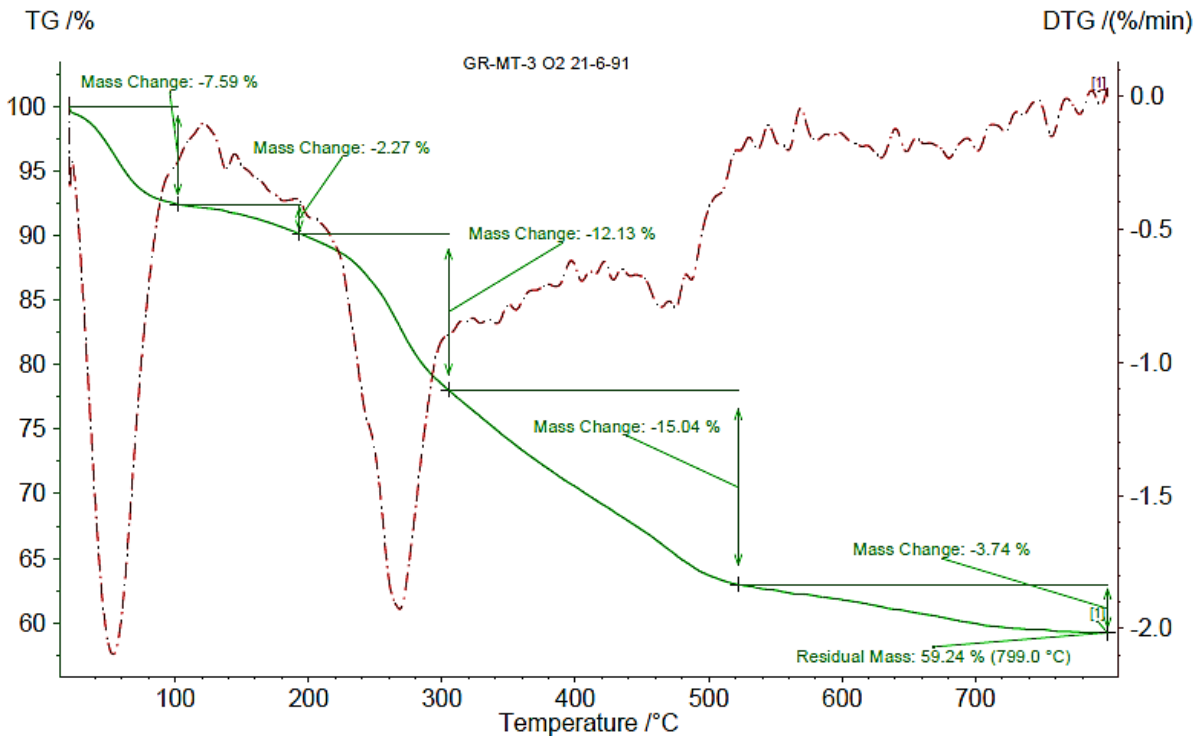
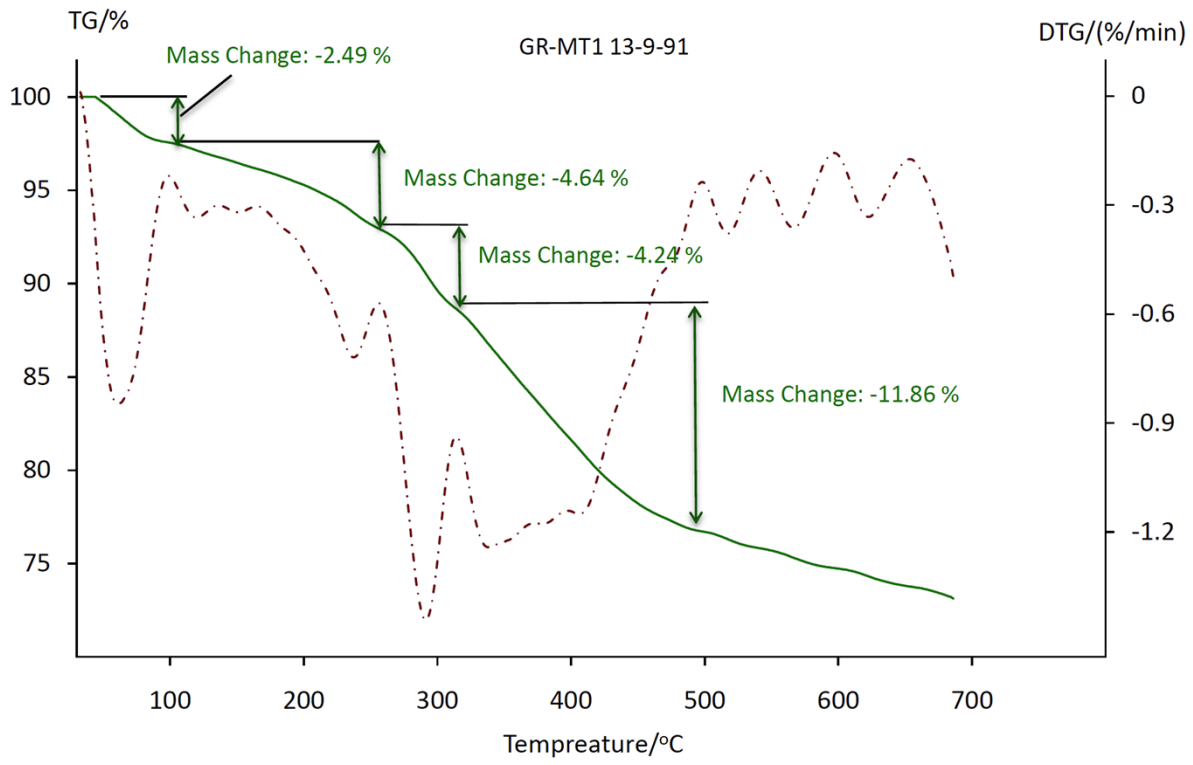


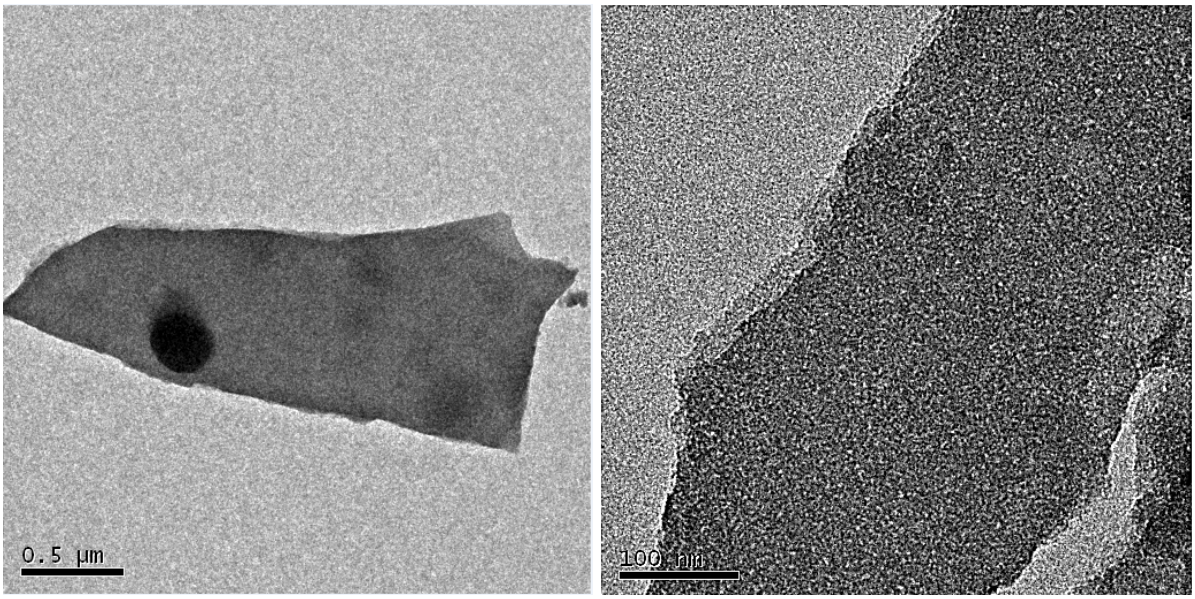
Supplementary Fig. 1. Thermogravimetric analysis (TGA) of scratched TEMPO functionalized silica thin film constructed by Co-condensation (CSTE)



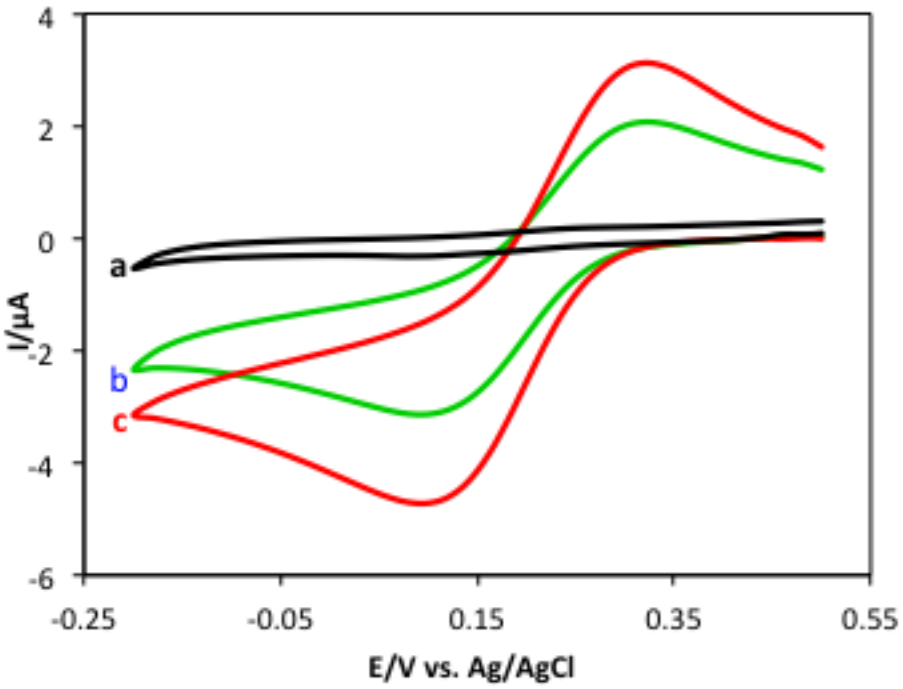
Supplementary Fig. 2. Thermogravimetric analysis (TGA) of scratched TEMPO Grafted silica thin film constructed by Co-condensation (TGSE).

Supplementary Table 1. the elemental analysis of scratched films: Sample 1: CSTE Sample 2: TGSE

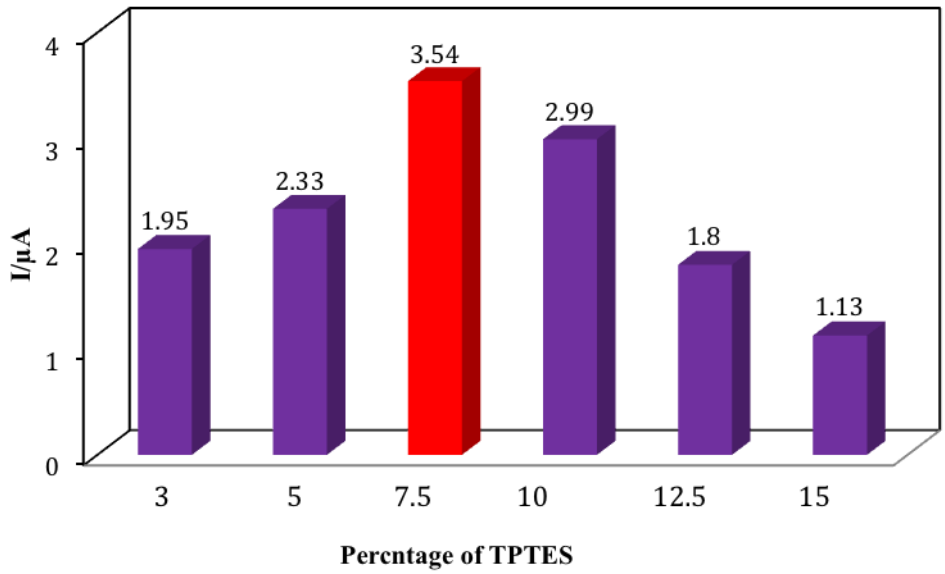
Sample No	Weight	Content %
1 (CSTE)	5.08 mg	N 1.97 % C 18.27 % H 4.02 %
2 (TGSE)	5.11 mg	N 1.27 % C 13.52 % H 3.08 %



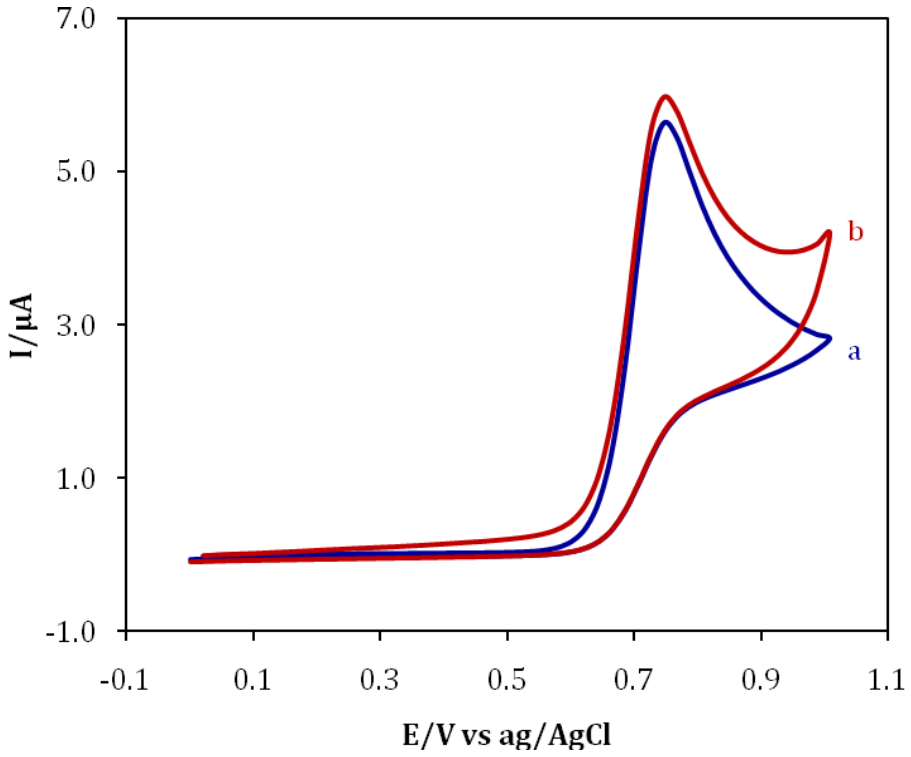
Supplementary Fig. 3. TEM image of CSTE



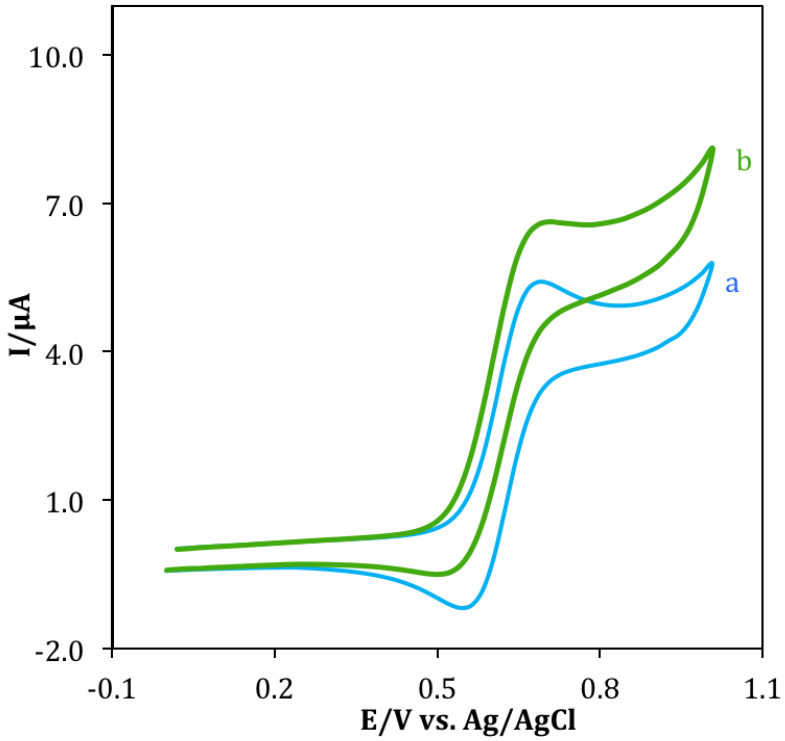
Supplementary Fig. 4. The CVs of $Fe(CN)_6^{3-}$ at CSTE before (a) and after CTAB extraction (b) and at TGSE (c); scan rate 100 mVs^{-1}.



Supplementary Fig. 5. The anodic peak current of anchored TEMPO for CSTE versus the percent of TPTES in sol solution.



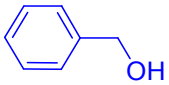
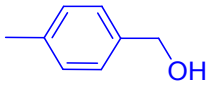
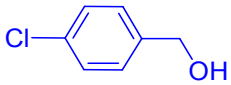
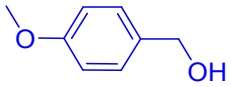
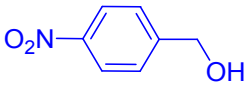
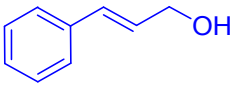
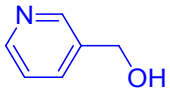
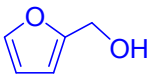
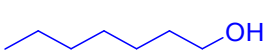
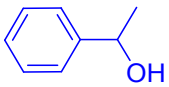
Supplementary Fig. 6. The CVs of 1.0 mM TEMPON solution at bare GC electrode in bicarbonate solution 0.15 M; scan rate 100 mVs^{-1}.



Supplementary Fig. 7. The CVs of CSTE in the absence (a) and presence of 1.0 mM BA (b); scan rate 100 mVs^{-1}.

Supplementary Fig. 8. Images of employed electrochemical cell with 124 cm^2 geometric area of working electrode.

Supplementary Table 2. the obtained TOF for 1 mmol of various alcohols based on the conversion in table 2 using TGSE.

Entry	Substrate	TOF
1		214.29
2		214.29
3		214.29
4		107.14
5		205.71
6		214.29
7		40.71
8		18.21
9		65.00
10		20.57