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# **Supporting Information**

# Amine functionalization of *N*,*N*,*N*,*N*-tetramethyl-*p*-phenylenediamine

### applicable to electrosynthesis a wide range of *p*-phenylenediamines in green

#### conditions

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Fig. S1. Cyclic voltammograms of 0.4 mM 1 toward positive going scan in ethanol/ buffered solutions (1 ml ethanol/9 ml buffer) with various pH values; Scan rate:  $100 \text{ mV s}^{-1}$ .



Fig. S2. Cyclic voltammograms of 0.125 mmol of 1 in the presence of 0.125 mmol 4-TSA in ethanol/acetate buffered solutions (0.2 M, pH = 5.0) (20 mL ethanol/60 mL buffer solution), (a) to (f): progress of electrolysis.



Fig. S3. I: <sup>13</sup>C NMR and II: DEPT 135° <sup>13</sup>CNMR spectra of 2a

Atomic Number	Atom type Charge		
1	С	-0.09478	
2	С	-0.00915	
3	С	0.153914	
4	С	-0.12924	
5	С	0.067916	
6	С	-0.40797	
7	Н	0.216627	
8	Н	0.256257	
9	Н	0.228252	
10	N	0.244173	
11	N	-0.33294	
12	Ν	0.123167	
13	N	-0.31512	
14	0	0.261419	
15	0	0.231905	
16	С	-0.48314	
17	С	-0.44068	
18	С	-0.38849	
19	Н	0.192497	
20	Н	0.272697	
21	Н	0.231077	
22	Н	0.172979	
23	Н	0.27697	
24	Н	0.225565	
25	Н	0.327888	
26	Н	0.343031	
27	Н	0.287113	
28	Н	0.261173	
29	Н	0.226884	

Fig. S4: Calculated natural charge of each atom in ADPM<sub>ox</sub>



Figure S5. FT-IR spectrum of NDPM





Figure S6. I: Experimental and II: simulated <sup>1</sup>H NMR spectra of NDPM



Figure S7. <sup>13</sup>C NMR spectrum of NDPM



Figure S8. Mass spectrum of NDPM



Figure S9. FT-IR spectrum of 2a



Figure S10. <sup>1</sup>H NMR spectrum of 2a



Figure S11. <sup>13</sup>C NMR spectrum of 2a



Figure S12. Mass spectrum of 2a



Figure S13. FT-IR spectrum of 2b



Figure S14. <sup>1</sup>H NMR spectrum of 2b



Figure S15. <sup>13</sup>C NMR spectrum of 2b



Figure S16. Mass spectrum of 2b



Figure S17.FT-IR spectrum of 2c



Figure S18. <sup>1</sup>H NMR spectrum of 2c



Figure S19.<sup>13</sup>C NMR spectrum of 2c



Figure S20. Mass spectrum of 2c