Electronic Supplementary Material (ESI) for Chemical Communications

One-Pot Synthesis of Hybrid TiO_2-Polyaniline Nanoparticles by Self-catalyzed Hydroamination and Oxidative Polymerization from TiO_2-Methacrylic Acid Nanoparticles

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Supporting information

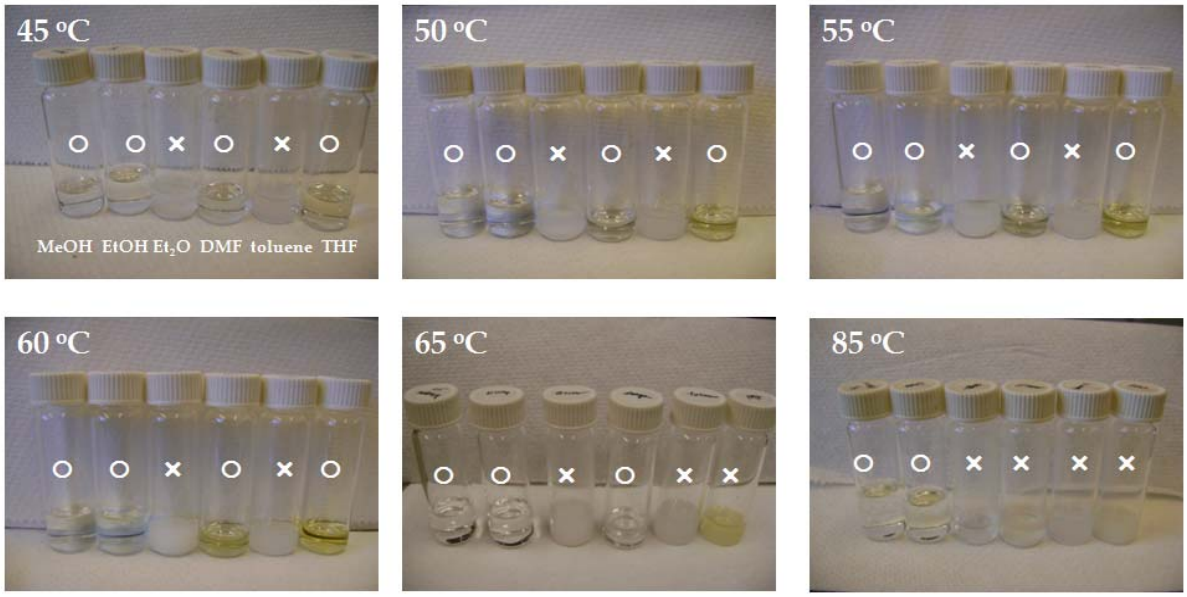

Figure 1S) 1 mg of TiO_2-MAA nanoparticles synthesized at various temperatures from 45 ^{o}C to 85 ^{o}C in 1 ml of various solvents (MeOH, EtOH, Et_2O, DMF, toluene and THF). O: soluble, X: insoluble

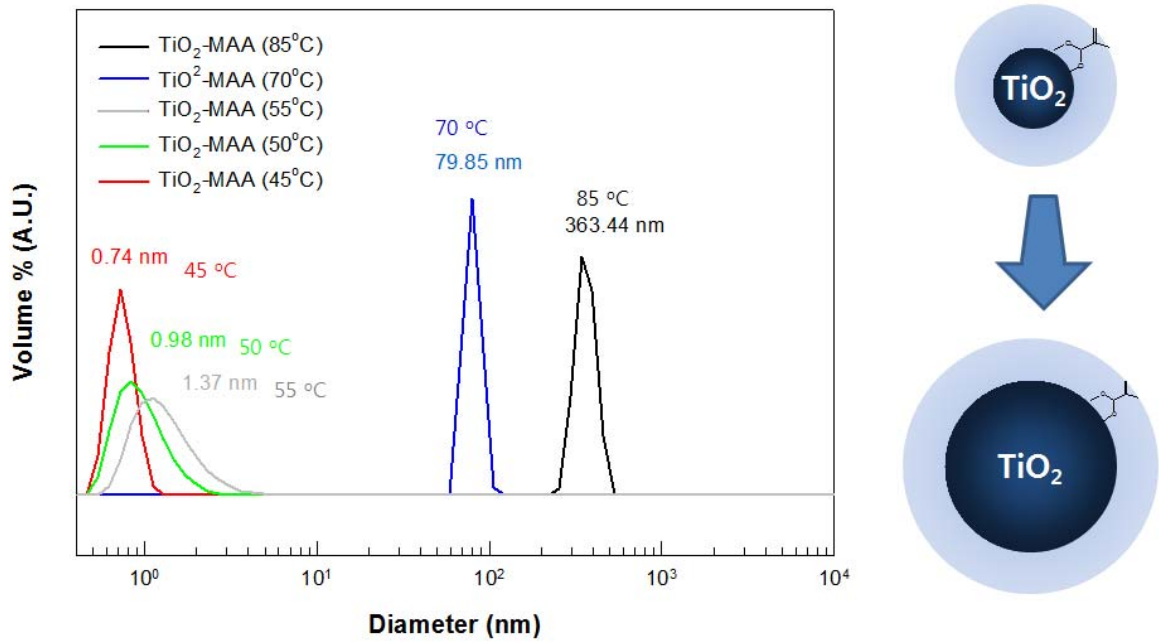

Figure 2S) Size measurement of TiO_2-MAA nanoparticle by dynamic light scattering (DLS)

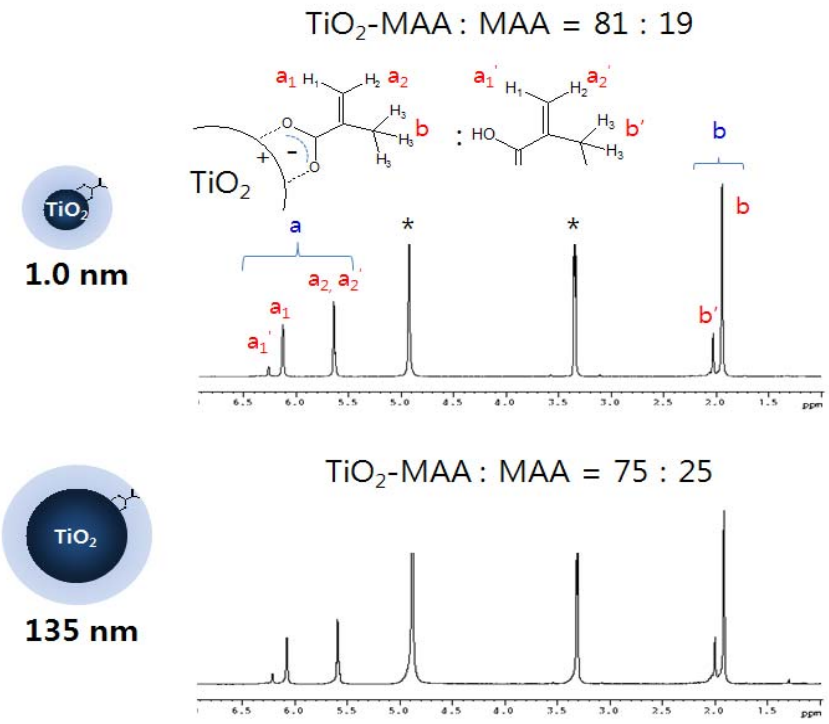

Figure 3S) ^{1}H NMR spectra of TiO_2-MAA nanoparticle used for the further hydroamination with aniline (in CD_3OD)

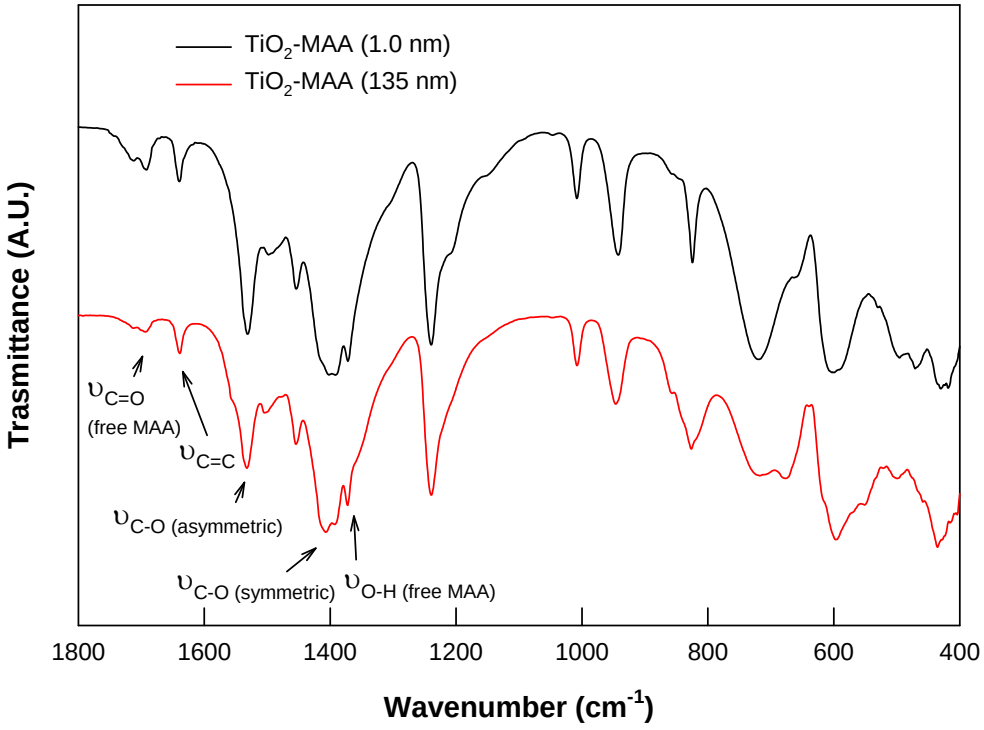

Figure 4S) FTIR spectra of TiO_2-MAA nanoparticle used for the further hydroamination with aniline

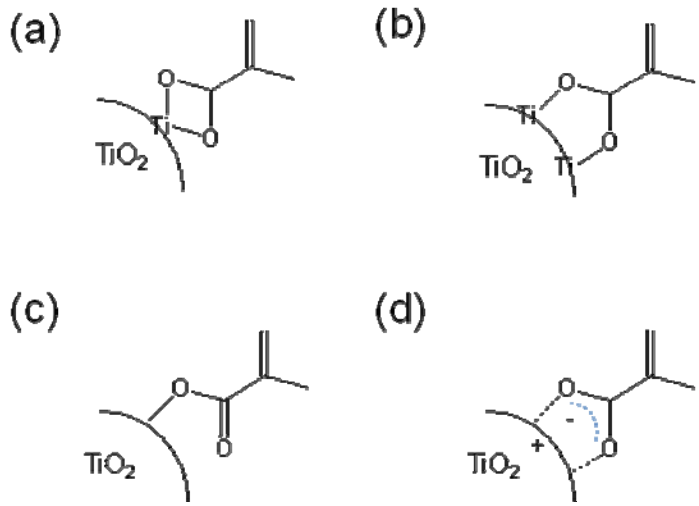

Figure 5S) The schematic representation of binding geometries between TiO_2 and MAA, (a) bidentate, (b) bibridging, (c) monodentate and (d) two-anchoring carboxylate ring mode

Table 1S) The nomenclature for hybrid TiO_2-PANI and TiO_2/PANI blends according to the different NP size and ANI:TiO_2-MAA feed ratio

Sample code	**ANI**	**TiO_2-MAA**	**NP Size**	**Etc.**
TiO_2-PANI-1-1	1 ml	10 mg	1 nm	hybrid
TiO_2-PANI-1-2	1 ml	30 mg	1 nm	hybrid
TiO_2-PANI-1-3	1 ml	50 mg	1 nm	hybrid
TiO_2-PANI-1-4	1 ml	100 mg	1 nm	hybrid
TiO_2-PANI-2-1	1 ml	10 mg	135 nm	hybrid
TiO_2-PANI-2-2	1 ml	30 mg	135 nm	hybrid
TiO_2/PANI-1	1 ml	10 mg	1 nm	blend
TiO_2/PAN-2	1 ml	30 mg	1 nm	blend
PANI	1 ml	-	-	homopolymer

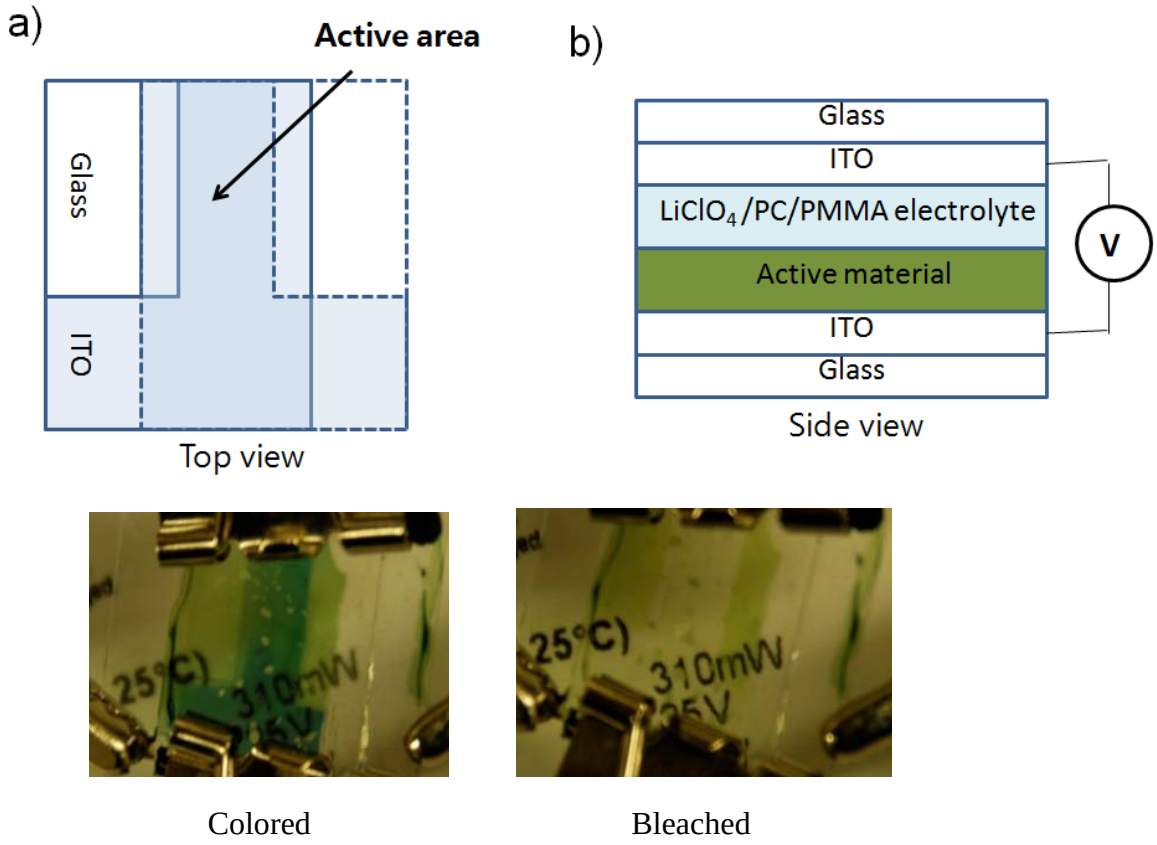

Figure 6S) Electrochromic device structure (a) from top view and (b) from side view

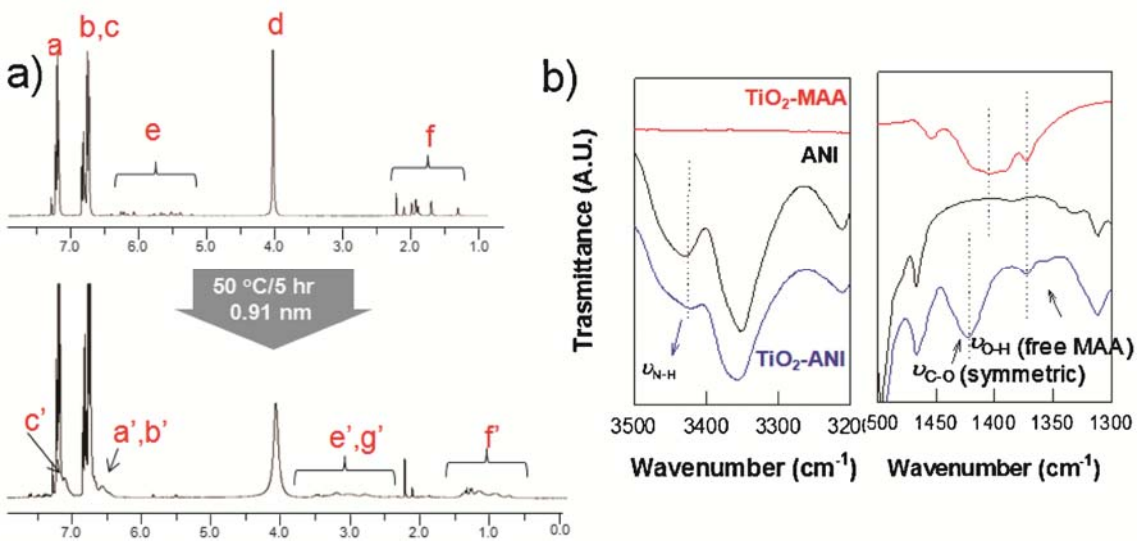

Figure 7S) (a) ^{1}H NMR spectra of TiO_2 MAA in aniline before and after hydroamination and (b) FTIR spectra of aniline and the TiO_2 MAA nanoparticles before and after hydroamination.