

Supporting Information

Polyphenol-grafted collagen fiber as reductant and stabilizer for one-step synthesis of size-controlled gold nanoparticles and their catalytic application to 4-nitrophenol reduction

Hao Wu,^a Xin Huang,^b Mingming Gao,^a Xuepin Liao,^{*,b} and Bi Shi^{*,a,b}

^a *National Engineering Laboratory of Clean Technology for Leather Manufacture, Sichuan University, Chengdu 610065, P. R. China*

^b *The Department of Biomass Chemistry and Engineering, Sichuan University, Chengdu, 610065, P. R. China*

* Corresponding Author. E-mail: xpliao@scu.edu.cn; sibitannin@vip.163.com

Table S1. Effects of EGCG grafting degree on the load and particle size of Au on catalysts

Catalysts	Amount of EGCG used (g)	Grafted quantity of EGCG on CF (g)	Au load (wt.%)	Au particles ^b	
				Size (nm)	SD (nm)
Au-CF	0	0	0.481	-	-
Au-EGCG_{0.01}-CF^a	0.05	0.048	0.577	18.6	7.4
Au-EGCG_{0.05}-CF	0.25	0.244	0.636	13.8	5.7
Au-EGCG_{0.1}-CF	0.5	0.485	0.723	10.7	3.8
Au-EGCG_{0.3}-CF	1.5	1.412	0.806	8.5	2.6
Au-EGCG_{0.5}-CF	2.5	1.747	0.827	6.4	1.9
Au-EGCG_{1.0}-CF	5.0	2.135	0.889	5.2	1.6

^a Subscript number stands for initial mass ratio of EGCG to CF. ^b The size and distribution of Au particles were measured by TEM images.

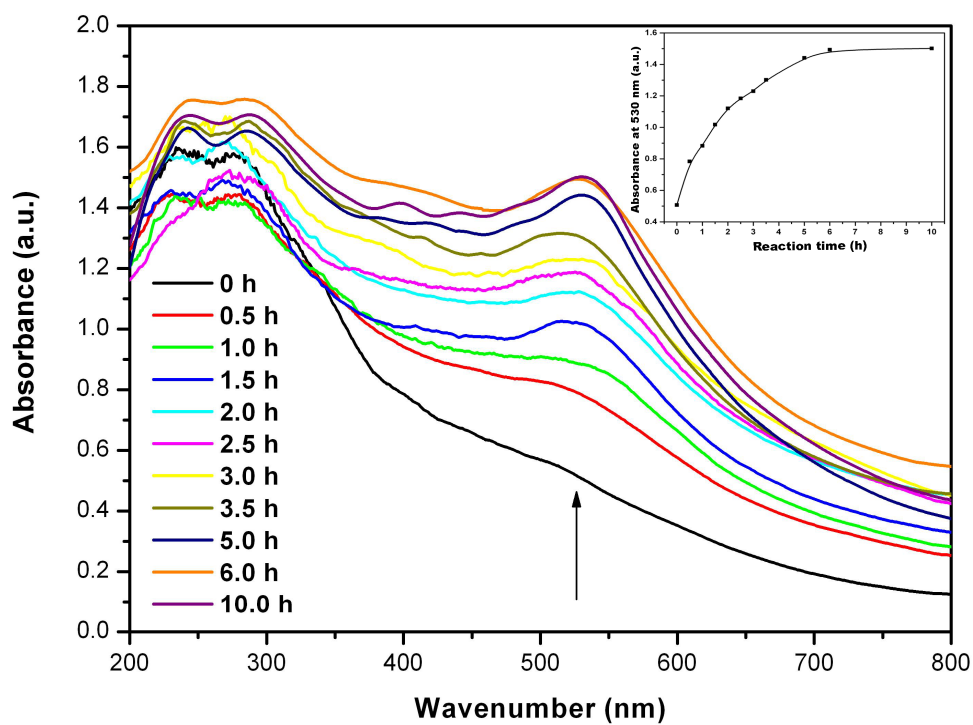


Figure S1. UV-vis DRS spectra of Au-EGCG_{0.1}-CF at different reaction time. Inset shows the relationship between reaction time and the corresponding intensity of SPR peak

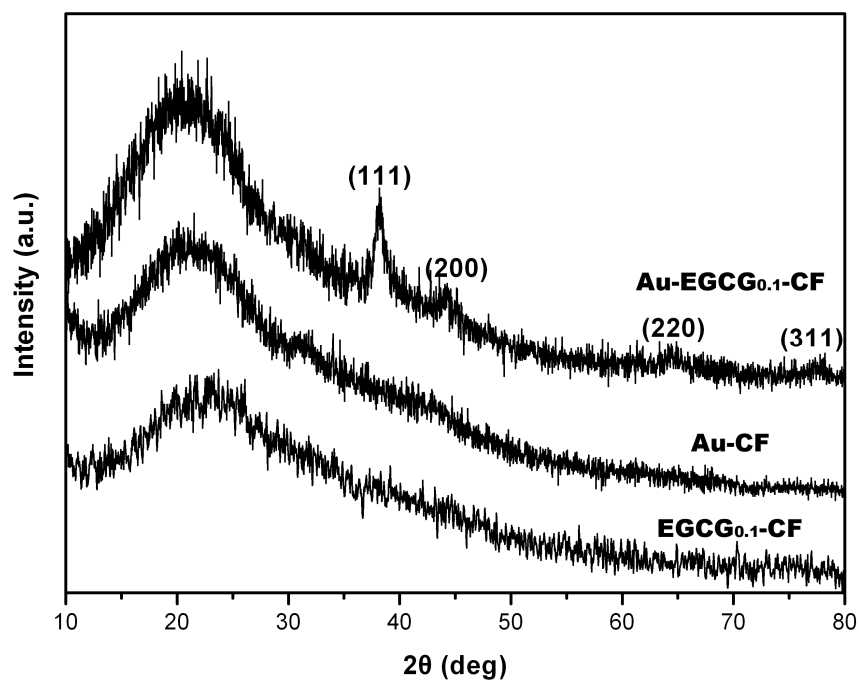


Fig. S2 XRD patterns of EGCG_{0.1}-CF, Au-EGCG_{0.1}-CF and Au-CF

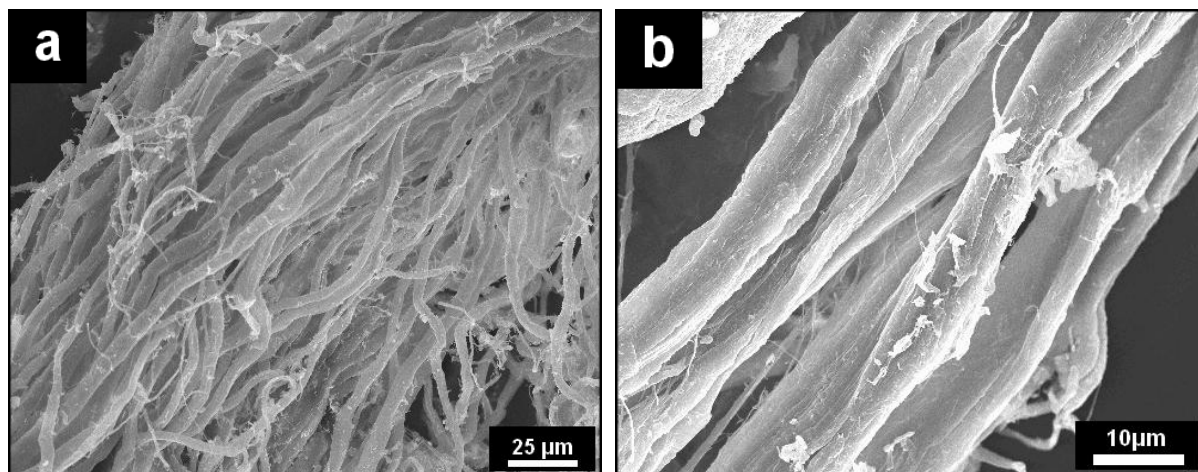


Figure S32. SEM images of Au-EGCG_{0.1}-CF at different magnification (a) and (b)

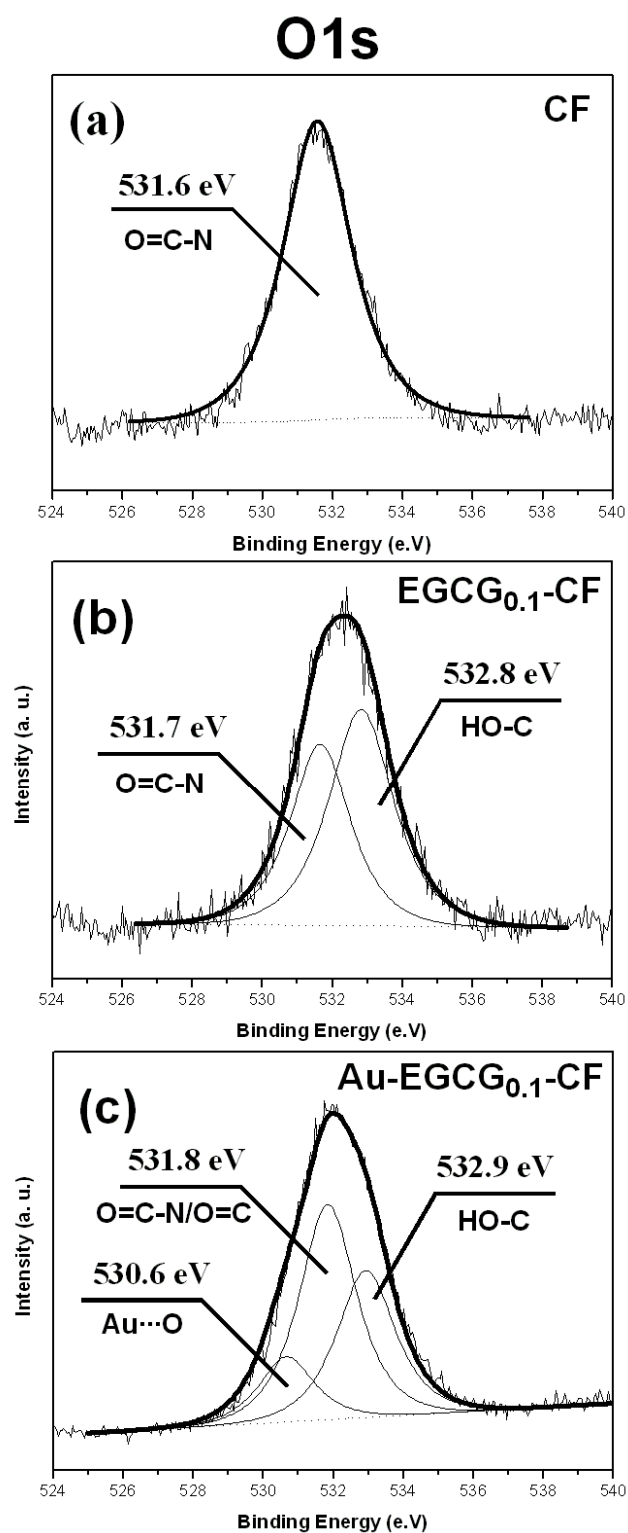


Figure S43. O1s core-level spectra of CF, EGCG_{0.1}-CF and Au-EGCG_{0.1}-CF

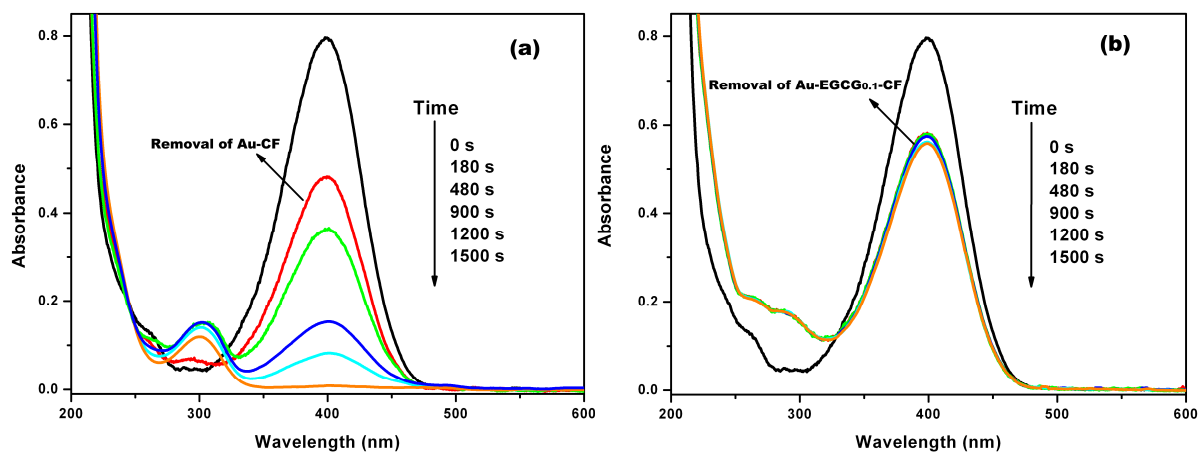


Figure S54. UV-vis adsorption spectra of the solutions of 4-NP reduction reaction.

0-180 s: catalyzed by (a) Au-CF and (b) Au-EGCG_{0.1}-CF; 180-1500 s: catalyst removed.