

Supporting Information

Plasmon-Induced Grafting in the Gap of Gold Nanoparticle Dimers for Plasmonic Molecular Junctions

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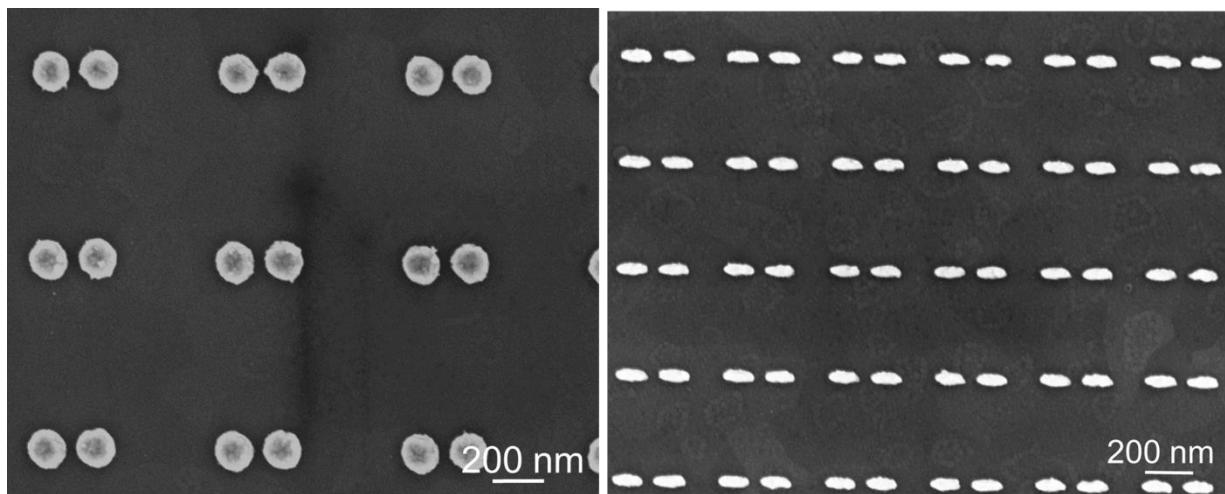


Figure S1: SEM image of a substrate bearing $80 \times 80 \mu\text{m}^2$ arrays of gold dimers separated by a center to center distance of 660 and 430 nm respectively fabricated by Electron-beam lithography a) dimers made of spherical NPs separated by a 30-40 nm gap, b) dimers made of nanorods NPs separated by a 50 nm gap

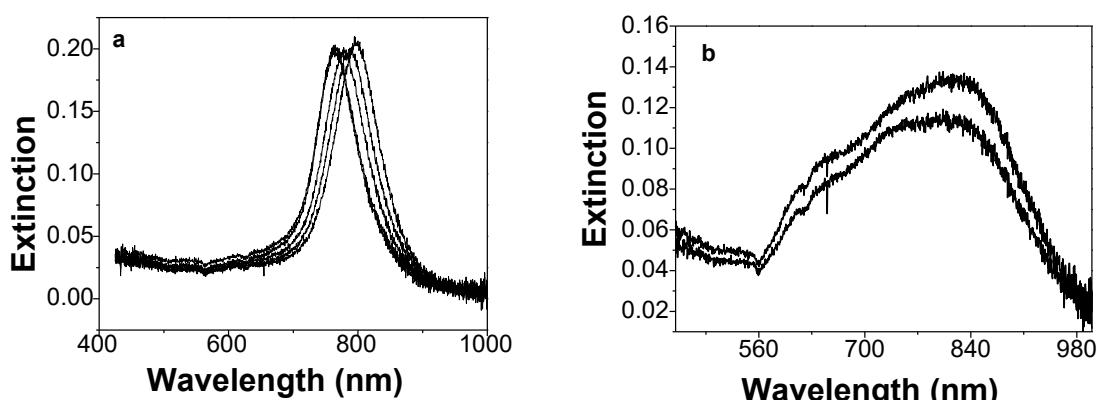


Figure S2: Extinction spectra of (a) 5 arrays of nanorod dimers (b) 2 arrays of Spherical dimers using light polarized along X

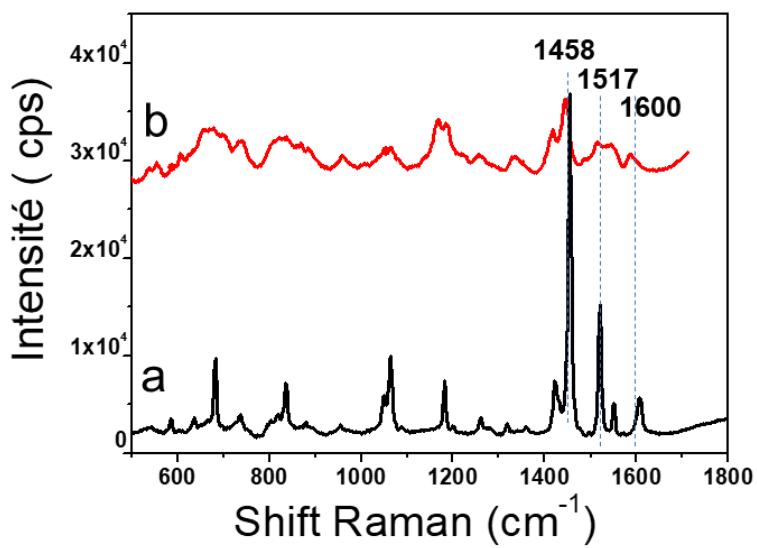


Figure S3: Raman and SERS spectra of (a) 1-(2-Bisthiienyl)-4-aminobenzene and (b) oligo(BTB) deposited on a nanorod graftings.

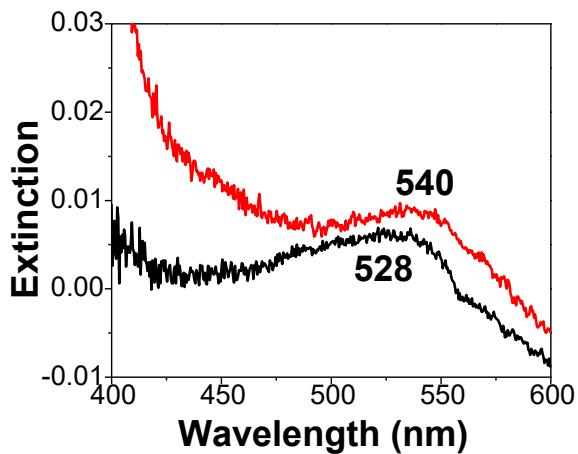


Figure S4: Extinction LSPR spectra along Y before (black curve) diazonium grafting and after diazonium grafting (red curve) using polarized light along Y.

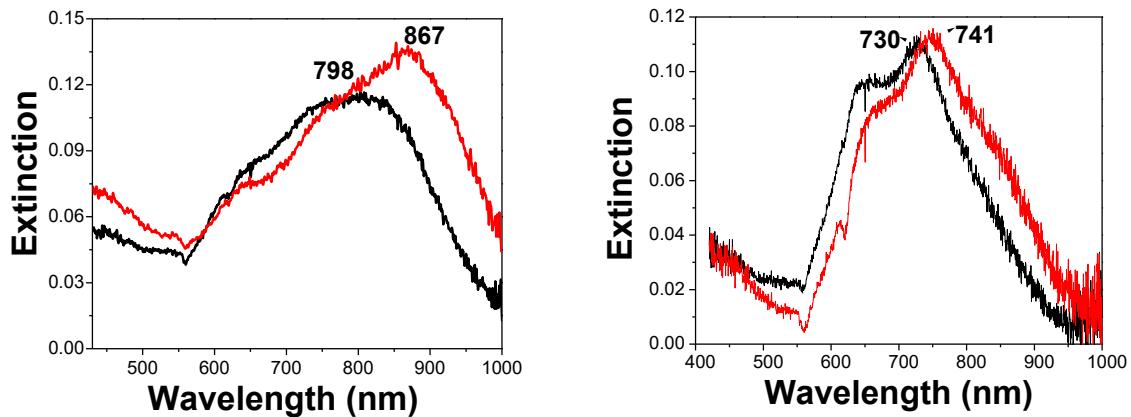


Figure S5: Extinction spectra an array of dimer of spherical Nps (a) along the X axis (b)) along the Y axis of the dimer before (black curve) and after (red curve) BTB plasmon induced grafting with light polarized along X.

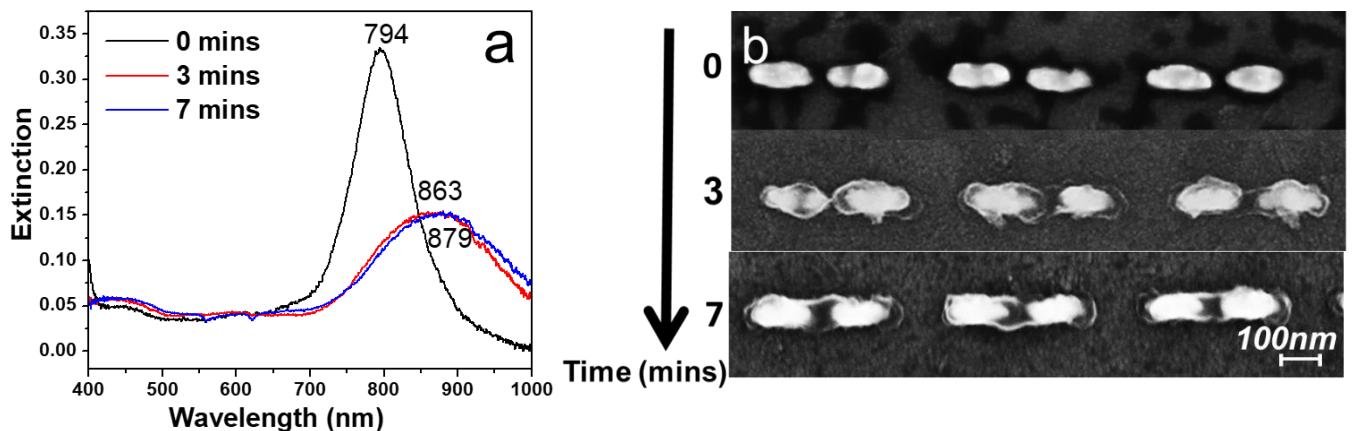


Figure S6: Effect of irradiation times on the BTB grafted deposition process. (a) Extinction spectra of NR gold dimers (b) SEM image before and after 3 and 7 minutes of irradiation times along the X respectively at 0.6 W.cm^{-2} .

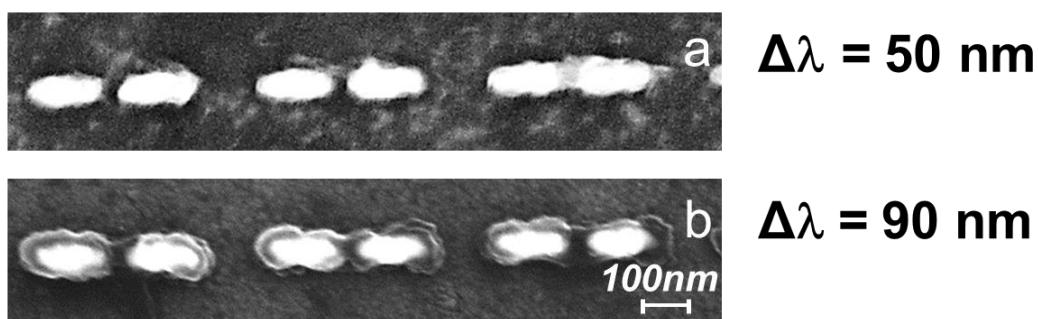


Figure S7: SEM image and LSPR shigt of NR gold dimers connected by BTB layer after 10 min irradiation time along the X axis with two different irradiation power (a) 0.27 W.cm^{-2} (b) 0.6 W.cm^{-2} .

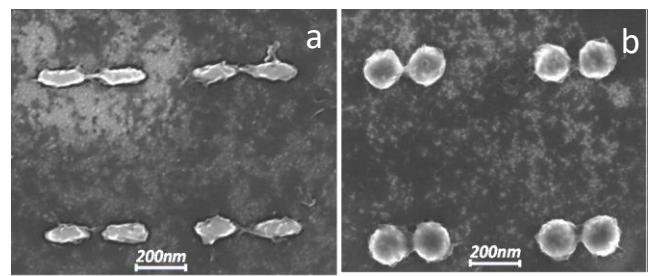


Figure S8: SEM image of four adjacent a) NR or b) NS dimers which have been connected simultaneously by oligomer layers spanning the 30-50 nm gap.

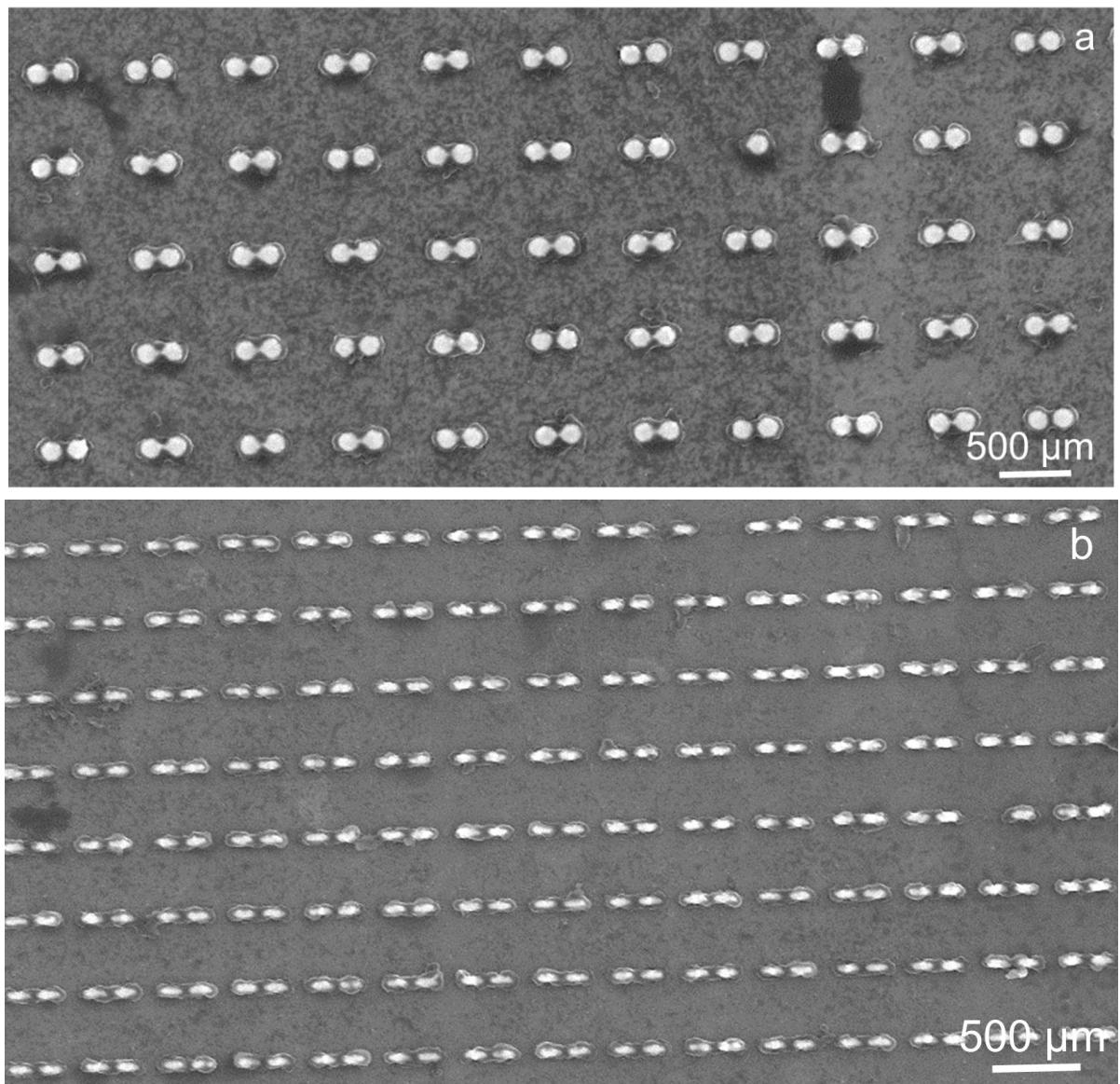


Figure S9: SEM image of a) 55 adjacent NS and b) of 120 NR dimers which have been connected simultaneously by oligomer layers spanning the 30-50 nm gap in the X direction.

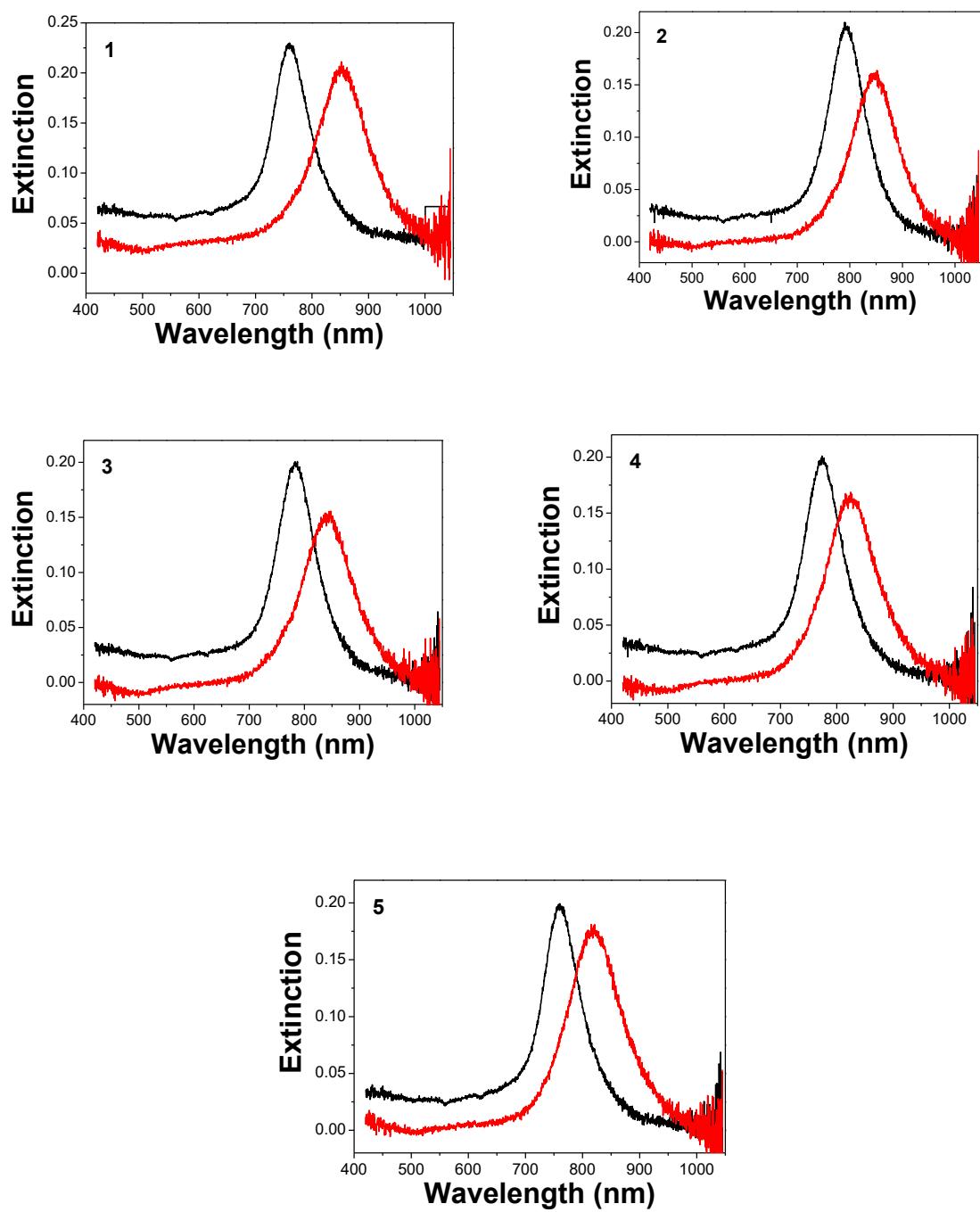


Figure S10 : Extinction spectra of five arrays of NR gold dimers along the X axis before (black curve) and after (red curve) oligo(BTB) plasmon induced grafting with light polarized along X. The five arrays are simultaneously grafted in 10 min.

Arrays number of NR dimer	LSPR wavelength before grafting		LSPR wavelength after grafting		LSPR Shift	
	X direction	Y direction	X direction	Y direction	X direction	Y direction
1	756	540	844	545	88	5
2	768	536	852	546	84	7
3	769	543	849	549	80	6
4	772	542	852	548	80	6
5	759	539	840	544	81	5

Table S1 : Extinction spectra along the X and Y axis of the five gold NR arrays deposited on an ITO substrates and simultaneously grafted by oligo(BTB) layers by plasmon induced reduction grafting with light polarized along X.