Solvated electron-induced synthesis of cyclodextrin-coated Pd nanoparticles: mechanistic, catalytic, and anticancer studies

A. Guleria^{a,g*}, J. Aishwarya^{b,g}, A. Kunwar^{a,g}, S. Neogy^c, A. K. Debnath^d, M. C. Rath^{a,g}, S. Adhikari^{e,g} and A. K. Tyagi^{f,g*} ^aRadiation & Photochemistry Division, Bhabha Atomic Research Centre, Mumbai 400085, India ^bACTREC (TMC), Kharghar, Navi Mumbai, India ^cMaterials Science Division, Bhabha Atomic Research Centre, Mumbai 400085, India ^dTechnical Physics Division, Bhabha Atomic Research Centre, Mumbai 400085, India ^eScientific Information Resource Division, Bhabha Atomic Research Centre, Mumbai 400085, India

^fChemistry Division, Bhabha Atomic Research Centre, Mumbai 400085, India

^gHomi Bhabha National Institute, Trombay, Mumbai 400094, India

(a) 0-1s Survey O-Auger 4k ^{od-Auger} Intensity (cps) ^{3k} ^{3k} Pd-3d C-1s 0 200 400 600 800 1000 0 BE (eV) 22.0k Pd-3d_{5/2} 0 1s (c) Pd 3d (b) 13k -531.8 Pd-3d_{3/2} 20.0k ntensity (cps) 12k 533.2 Intensity (cps) 335.9 18.0k 530 336.9 11k 16.0k 338 2 14.0k 10k 12.0k 9k 532 528 530 534 536 526 340 332 334 336 338 342 344 346 BE (eV) BE (eV)

Supporting information

Fig.S1. (a) XPS survey spectrum of γ -ray@Pd NPs. (b) and (c) corresponds to the core-level XPS spectrum of Pd 3d and O 1s, respectively.



Fig.S2. (a) Particle size distribution plot and (b-d) HRTEM images of asprepared α -CD coated EB@Pd NPs at different magnification scales.



Fig.S3. HRTEM images of as-prepared α -CD coated γ -ray@Pd NPs at different magnification scales.



Fig.S4. FESEM images of α -CD coated EB@Pd NPs (a) and γ -ray@Pd NPs (b).



Fig.S5. FESEM images **(a)** & **(b)** of bare EB@Pd NPs at different magnification scales.



Fig.S6. FESEM image of PVA capped Pd NPs synthesised by γ -ray irradiation approach.