Supplementary Information (SI) for Materials Chemistry Frontiers.
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Gamma-Induced One-Step Synthesis of Reduced Graphene Oxide-Silver Nanoparticles with Enhanced Properties

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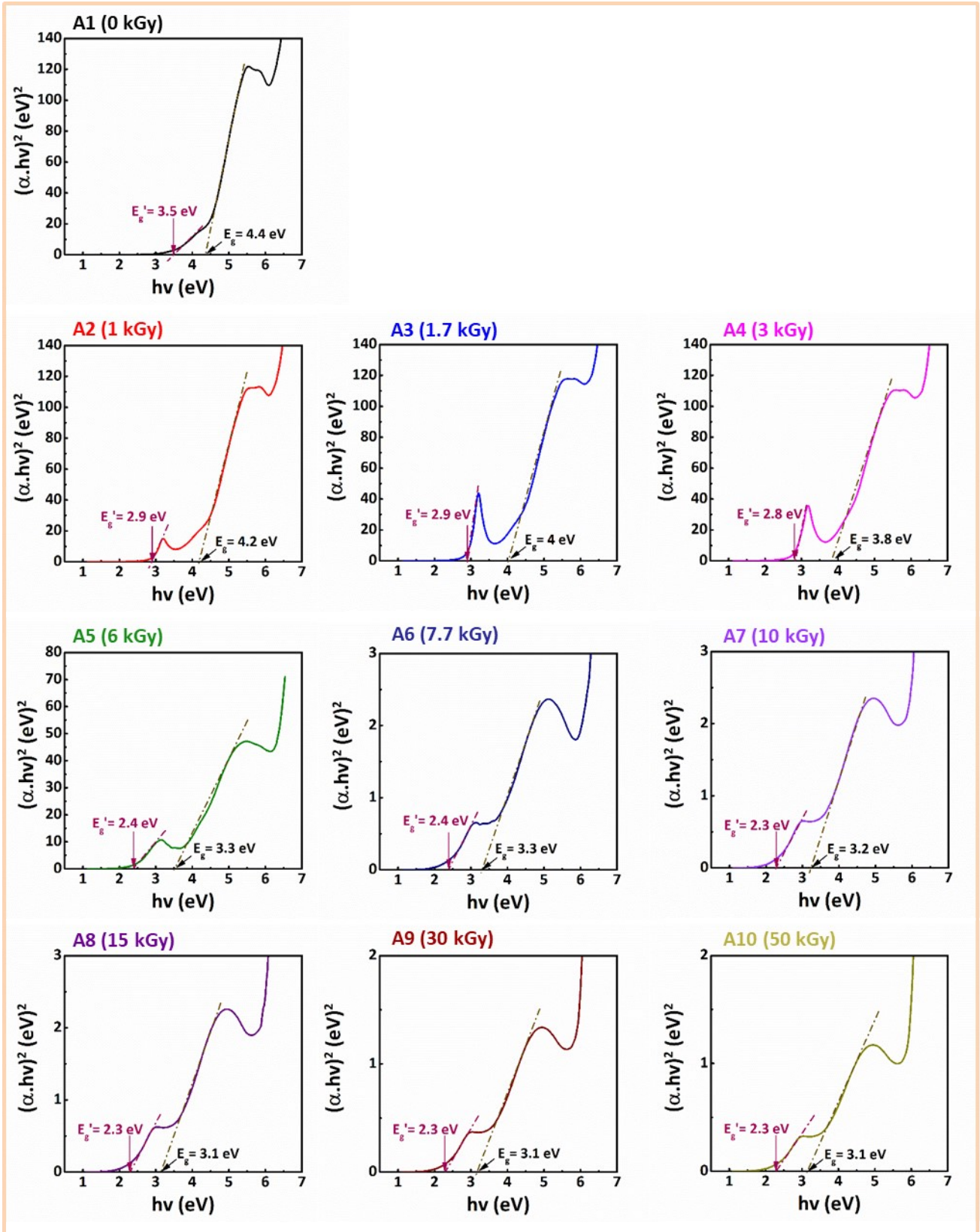

Fig. S1 Tauc plot for the determination of the energy gap from UV-Vis spectra of Series A samples ([OG] = 0.2 g L^{-1}, [IPA] = 0.2 mol L^{-1}, [Ag^+] = 10^{-3} mol L^{-1}) irradiated at doses ranging from 0 kGy to 50 kGy. The intersection of the linear fit with the x-axis represents the energy gap for each sample. E_g corresponds to the bandgap GO and rGO, while E_g' refers to the bandgap of Ag NPs.

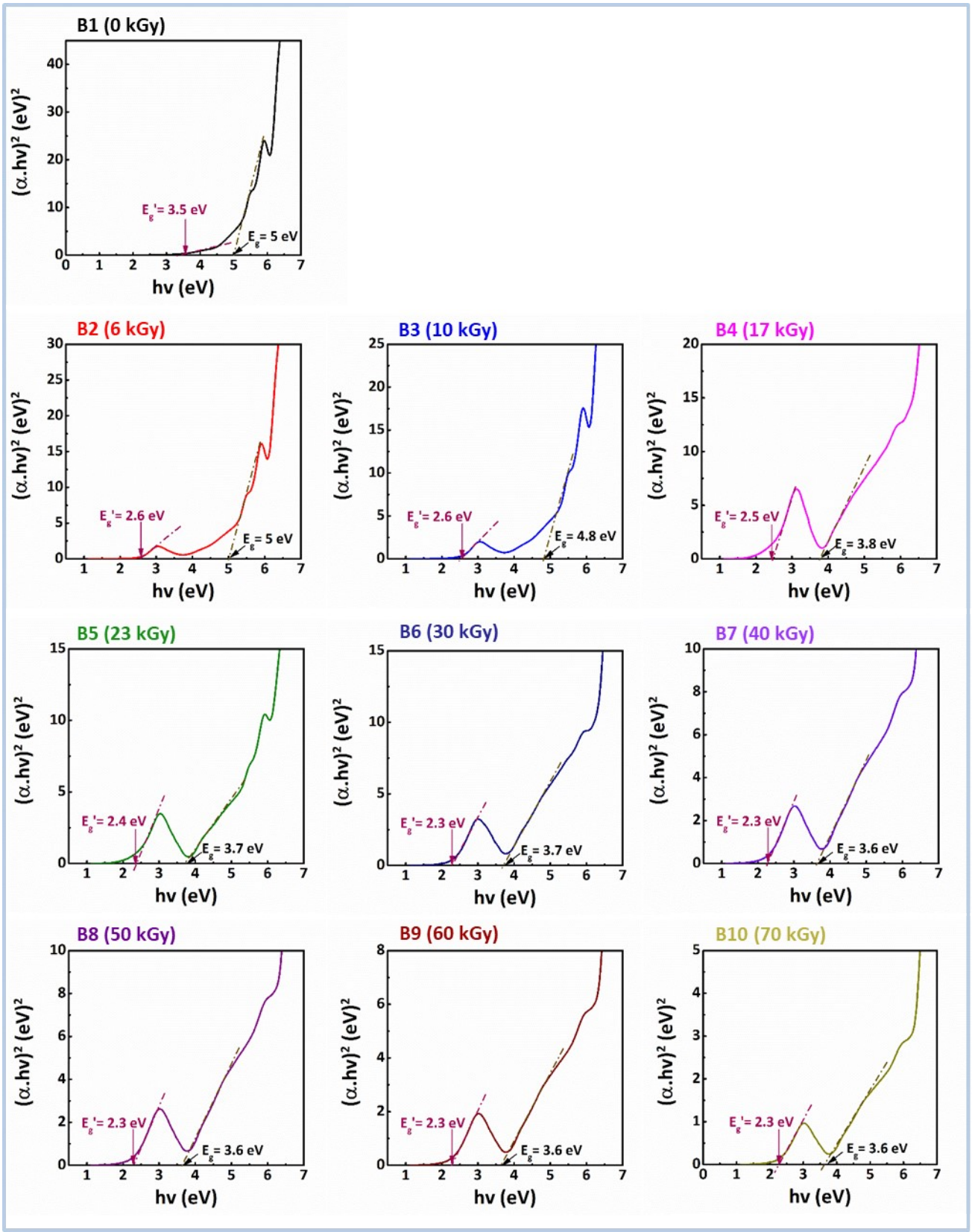

Fig. S2 Tauc plot for the determination of the energy gap (*E*g) from UV-Vis spectra of Series B samples ([OG] = 0.2 g L^{-1}, [IPA] = 0.2 mol L^{-1}, [Ag^+] = 10^{-2} mol L^{-1}) irradiated at doses ranging from 0 kGy to 70 kGy. The intersection of the linear fit with the x-axis represents the energy gap for each sample. E_g corresponds to the bandgap GO and rGO, while E_g' refers to the bandgap of Ag NPs.

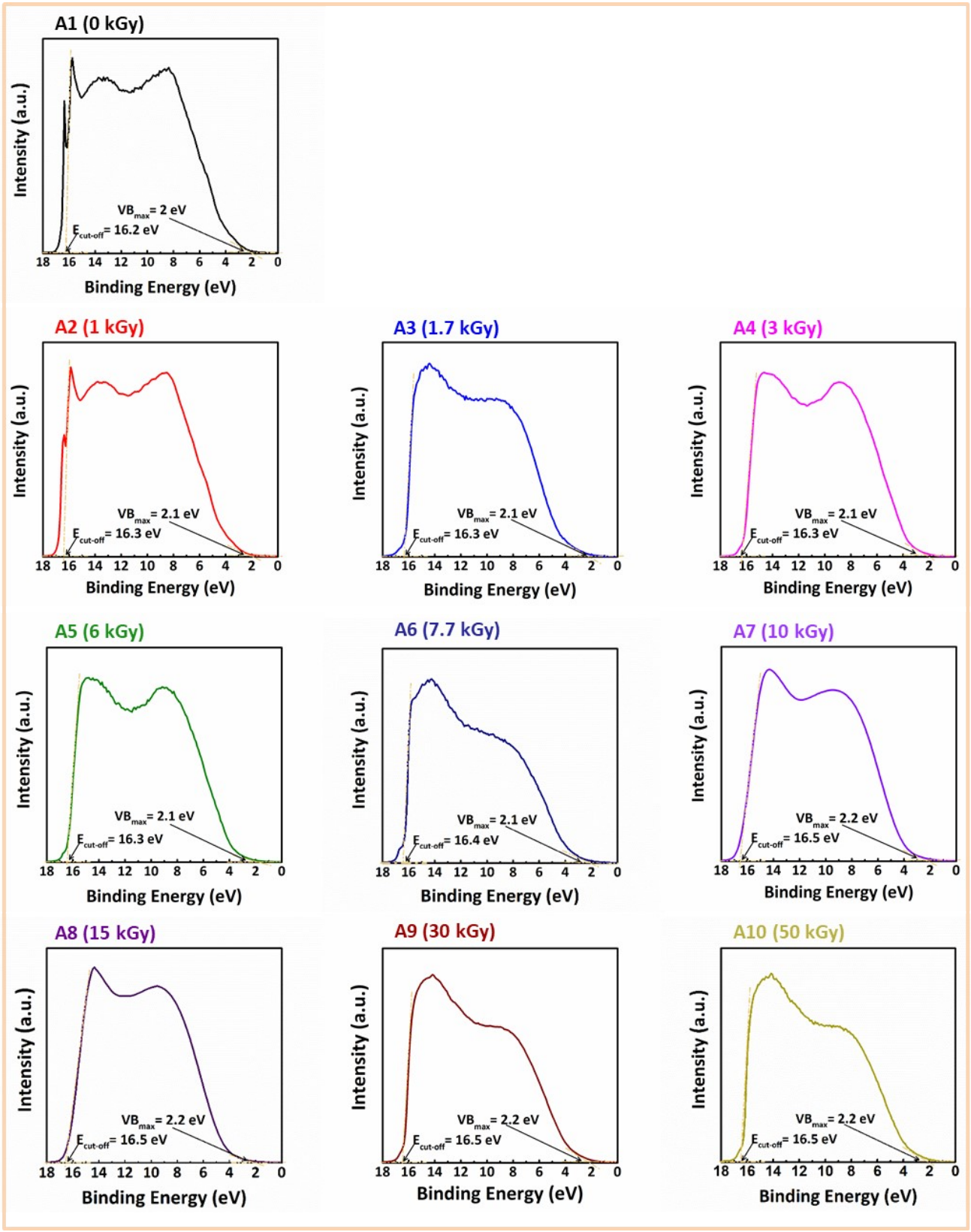

Fig. S3 Evolution of the UPS spectrum obtained using HeI for all samples in Series A containing GO (0.2 g L^{-1}), Ag^{+} (10^{-3} mol L^{-1}), and IPA (0.2 mol L^{-1}), both unirradiated and irradiated at various doses.

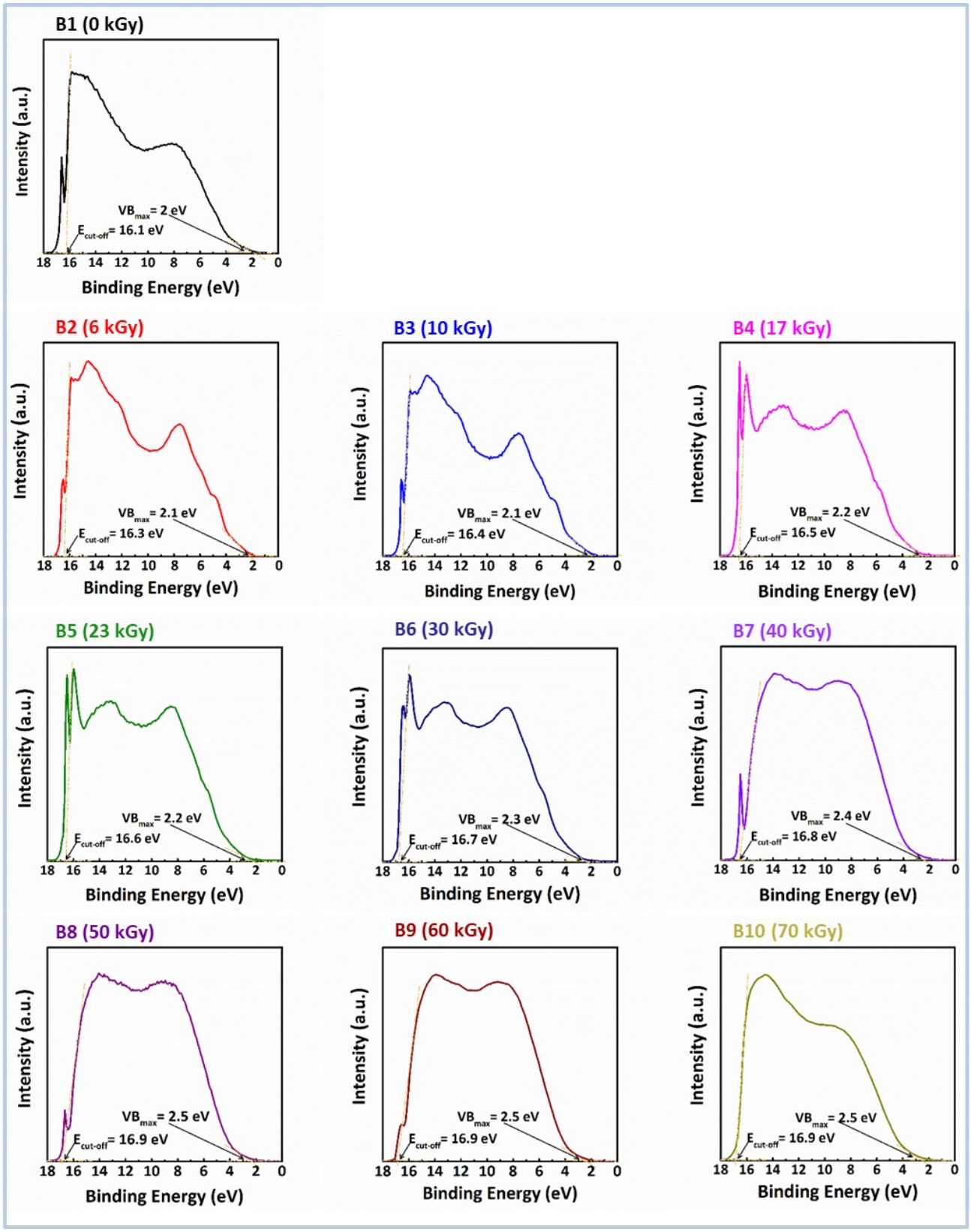

Fig. S4 Evolution of the UPS spectrum obtained using HeI for all samples in Series B containing GO (0.2 g L^{-1}), Ag+ (10^{-2} mol L^{-1}), and IPA (0.2 mol L^{-1}), both unirradiated and irradiated at various doses.

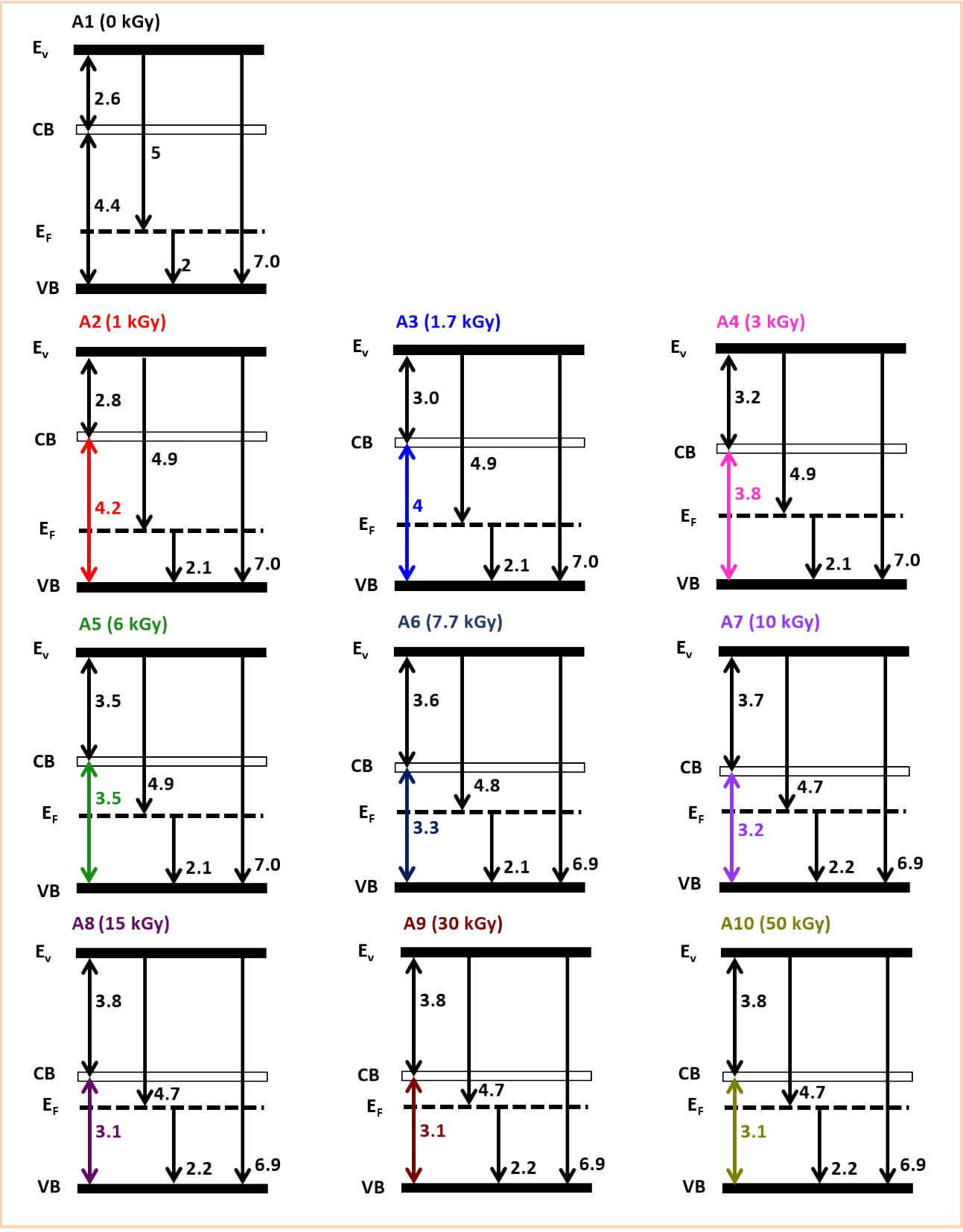

Fig. S5 Band diagrams illustrating the evolution of the band structure of GO (0.2 g L^{-1})-Ag^{+} (10^{-3} mol L^{-1}) in the presence of isopropanol (0.2 mol L^{-1}) as a function of absorbed dose (Series A).

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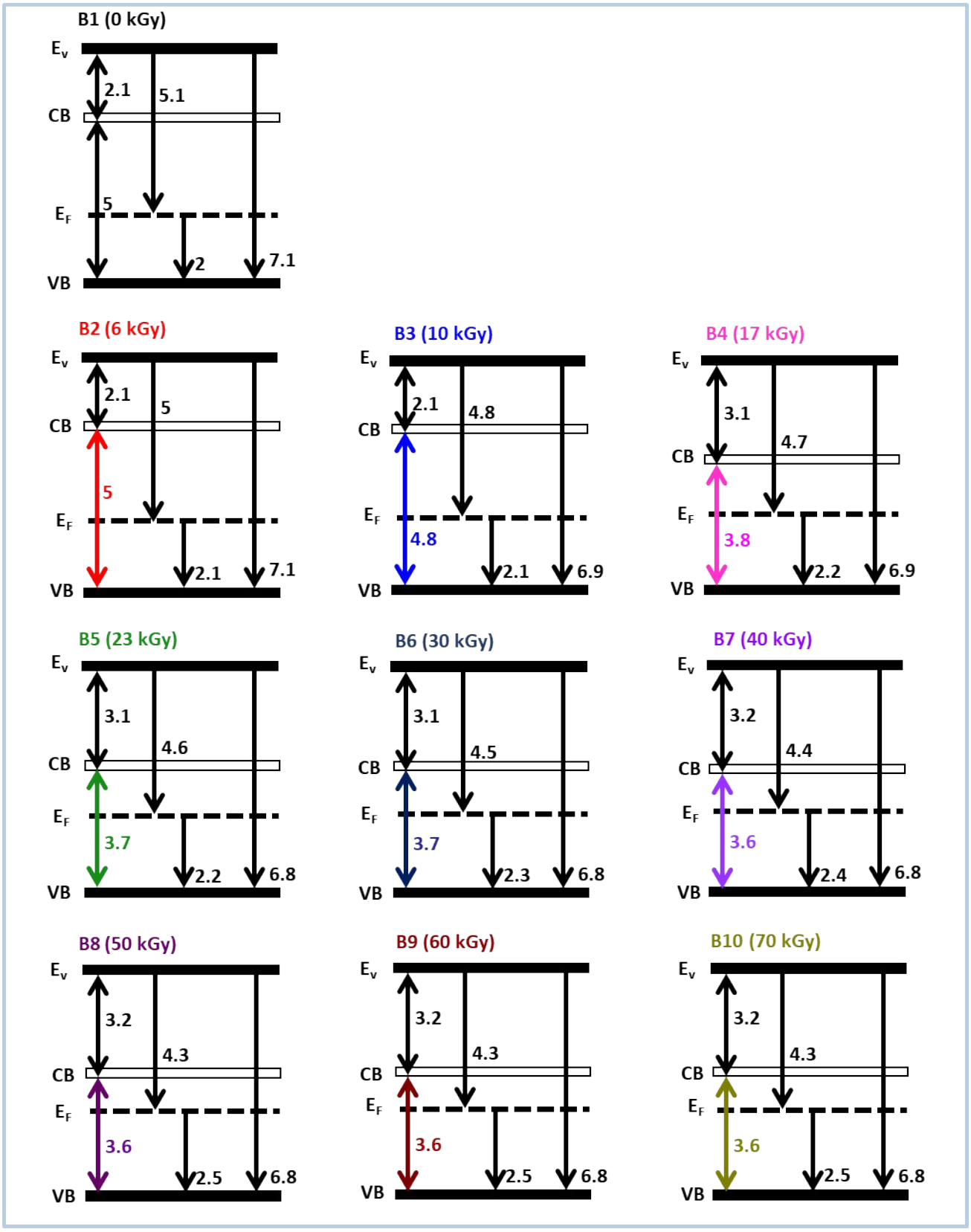

Fig. S6 Band diagrams illustrating the evolution of the band structure of GO (0.2 g L^{-1})-Ag^{+} (10^{-2} mol L^{-1}) in the presence of isopropanol (0.2 mol L^{-1}) as a function of absorbed dose (Series B).

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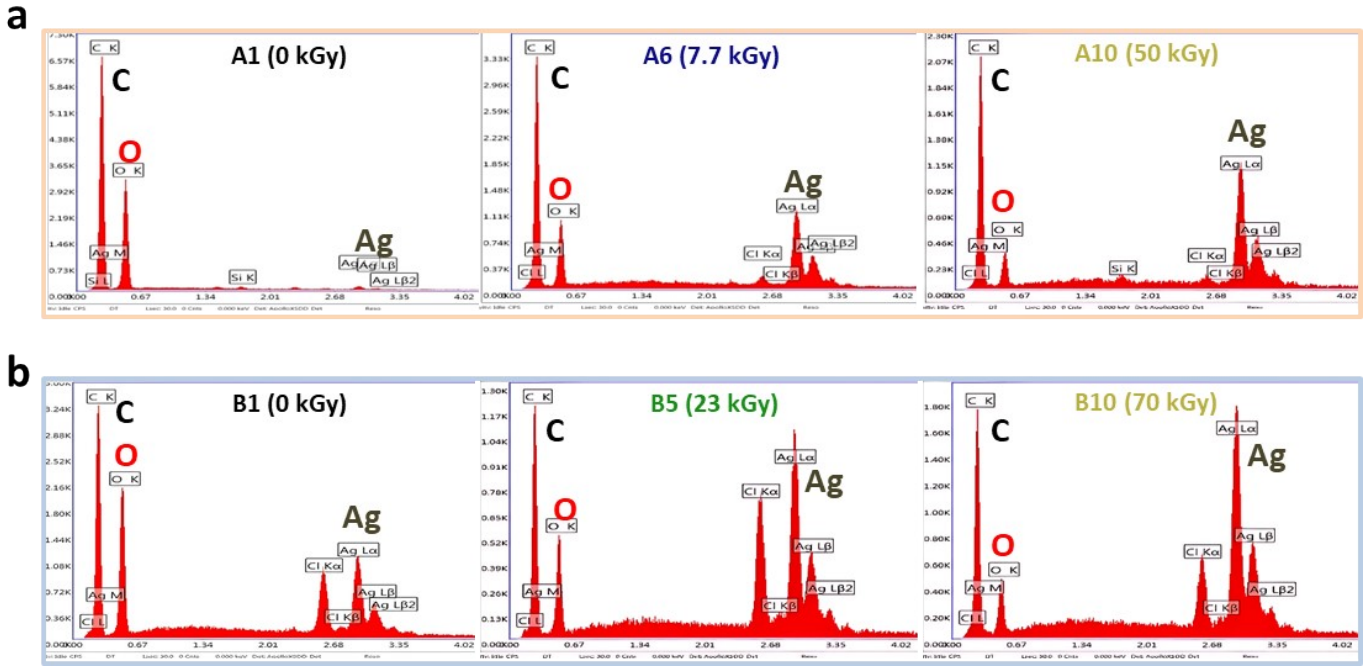

Fig. S7 EDX diagrams of samples containing GO and Ag^+ before and after irradiation at increasing absorbed doses: a) Series A ([OG] = 0.2 g L^{-1}, [IPA] = 0.2 mol L^{-1}, [Ag^+] = 10^{-2} mol L^{-1}) ; (b) Series B ([OG] = 0.2 g L^{-1}, [IPA] = 0.2 mol L^{-1}, [Ag^+] = 10^{-2} mol L^{-1}.

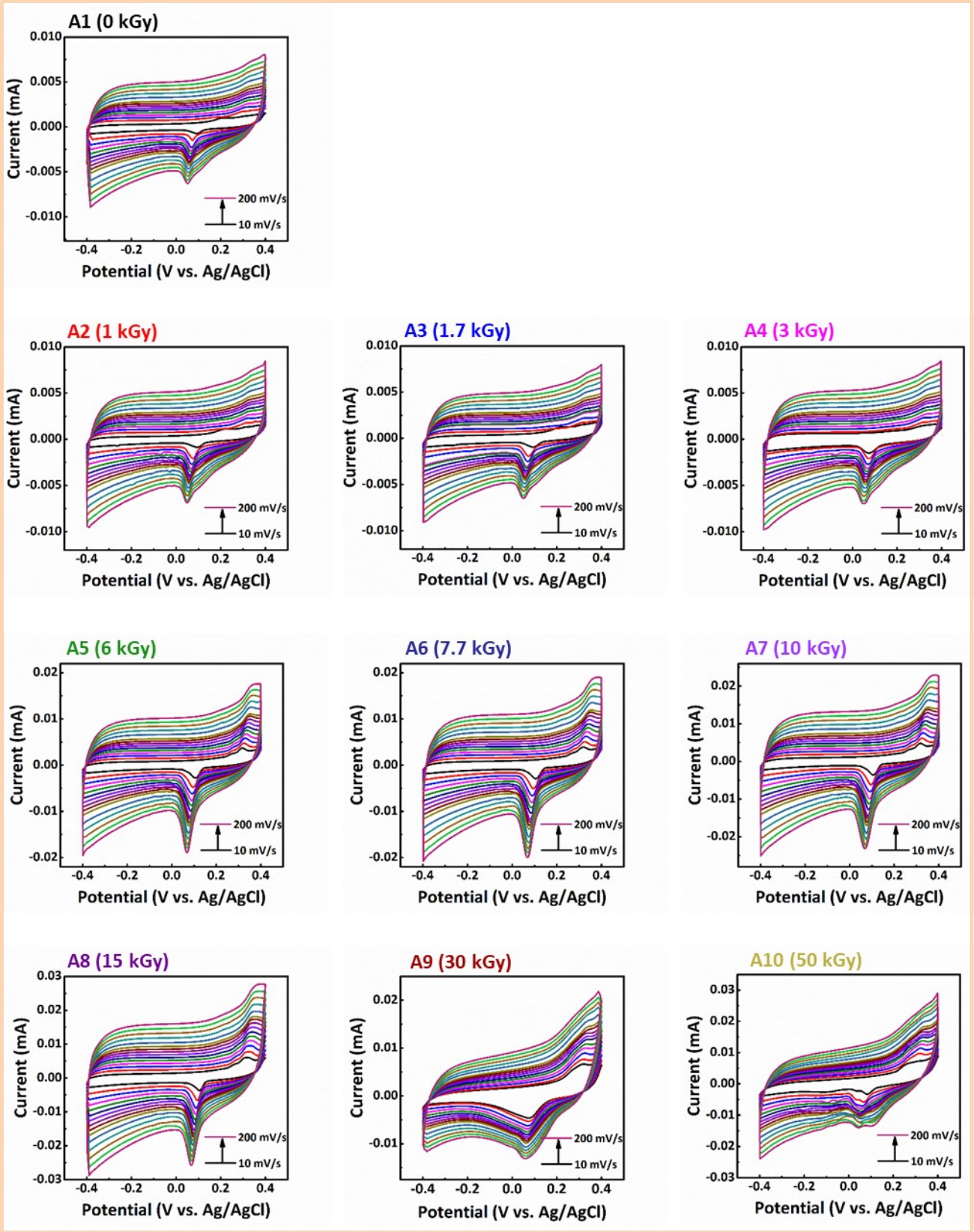

Fig. S8 Cyclic voltammograms at different scan rates (10-200 mV s^{-1}) in 0.1 M KOH electrolyte for non-irradiated and irradiated GO-Ag^{+} at different doses (Series A, [OG] = 0.2 g L^{-1}, [IPA] = 0.2 mol L^{-1}, [Ag^{+}] = 10^{-3} mol L^{-1}).

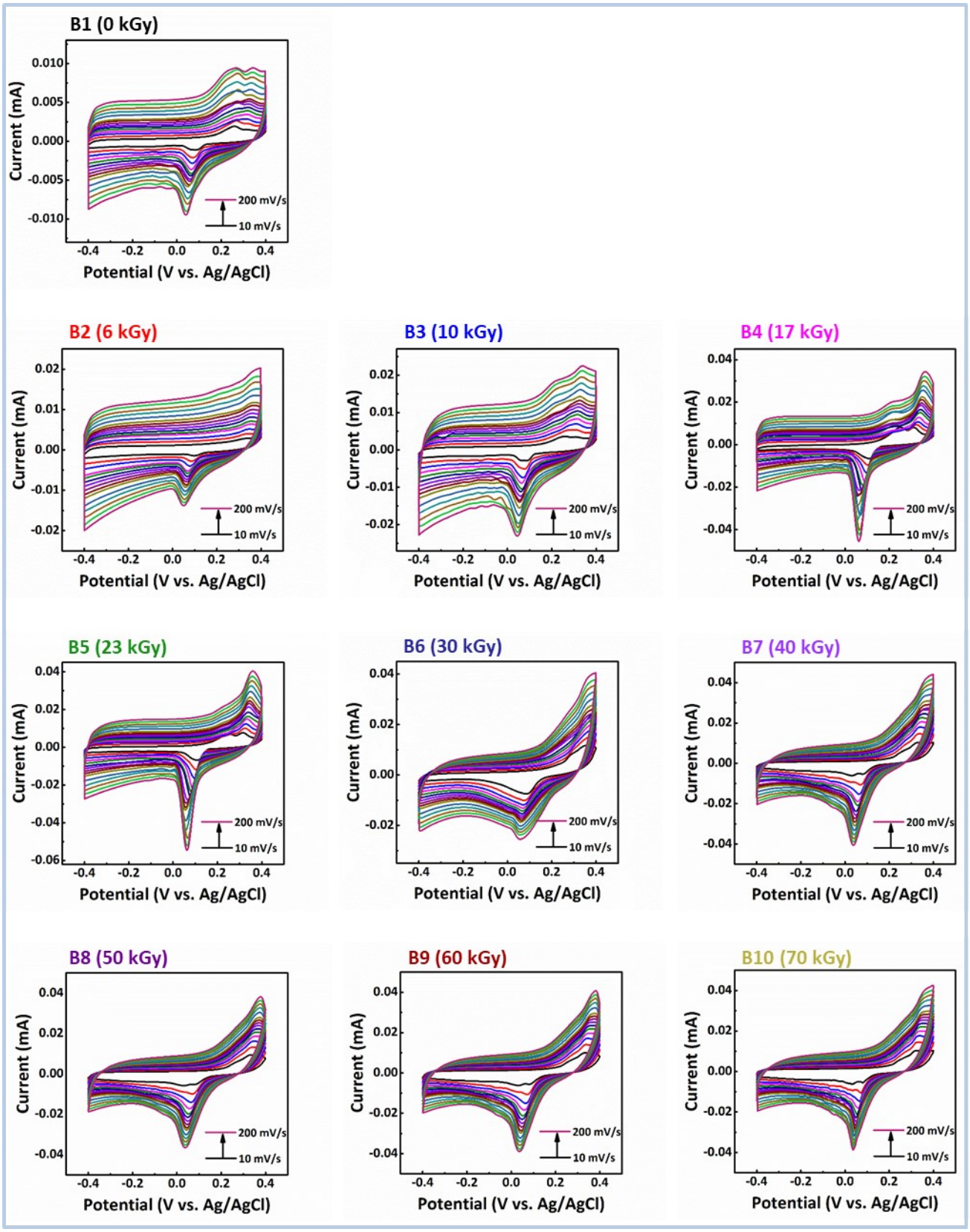

Fig. S9 Cyclic voltammograms at different scan rates (10-200 mV s^{-1}) in 0.1 M KOH electrolyte for non-irradiated and irradiated GO-Ag^{+} at different doses (SeriesB, [OG] = 0.2 g L^{-1}, [IPA] = 0.2 mol L^{-1}, [Ag^{+}] = 10^{-2} mol L^{-1}).