Supporting information

Modulating the nonlinear optical properties of $MAPbBr_3$ by metal ions doping

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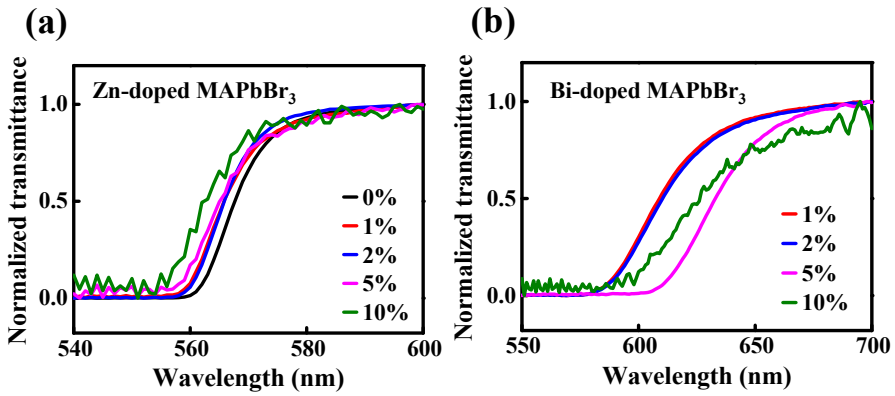

Figure S1. Transmission spectra of the undoped, Zn-doped and Bi-doped $MAPbBr_3$ with different doping concentrations.

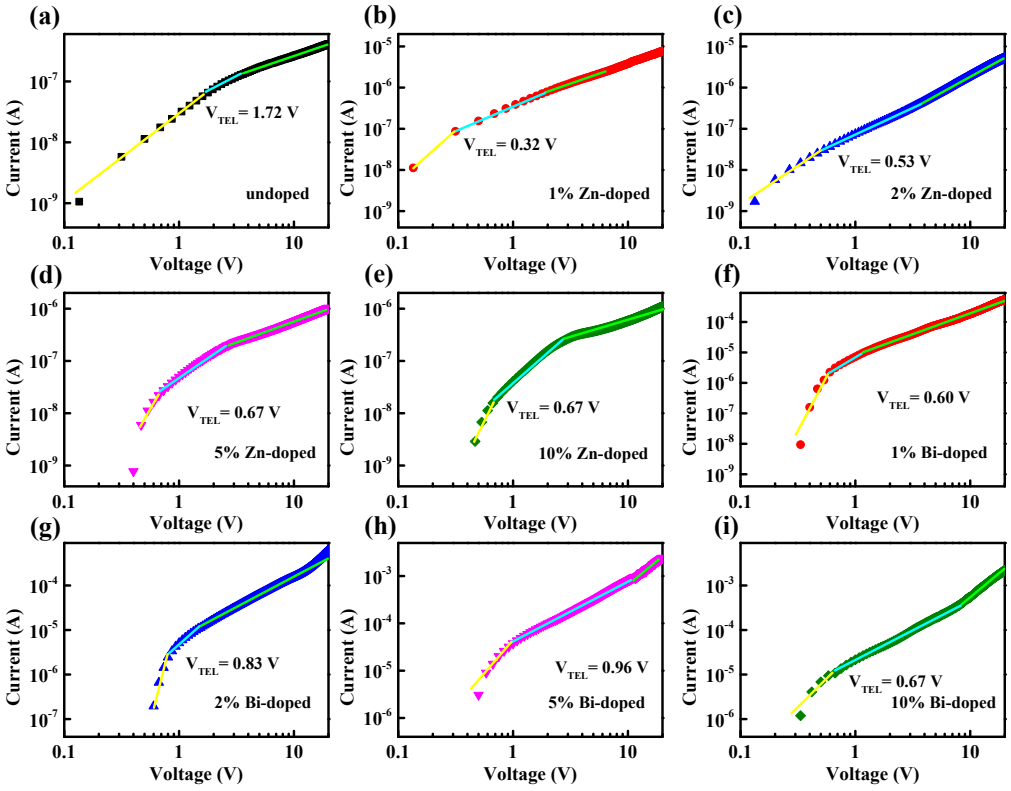

Figure S2. Double logarithmic current-voltage curves of the undoped, Zn-doped and Bi-doped $MAPbBr_3$.

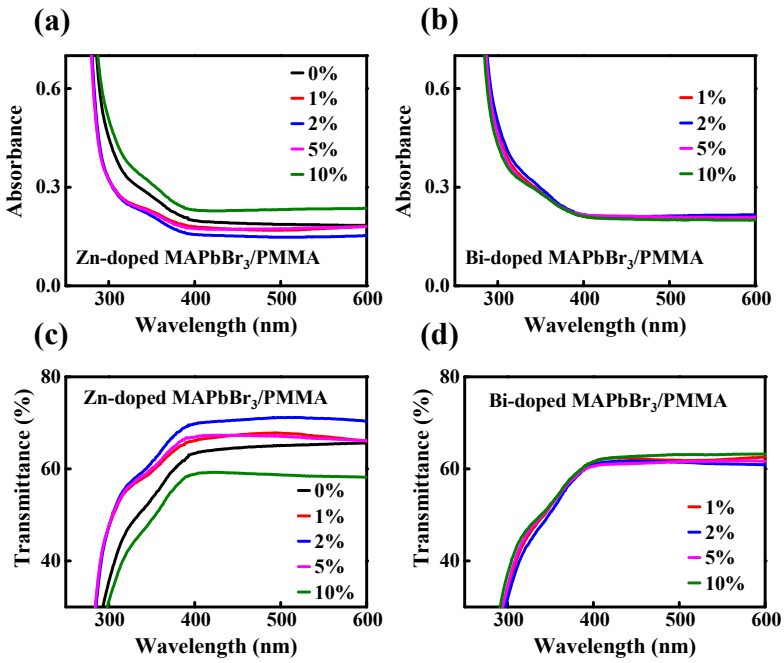

Figure S3. UV-vis absorption and transmission spectra of the undoped, Zn-doped and Bi-doped $MAPbBr_3$/PMMA with different doping concentrations.

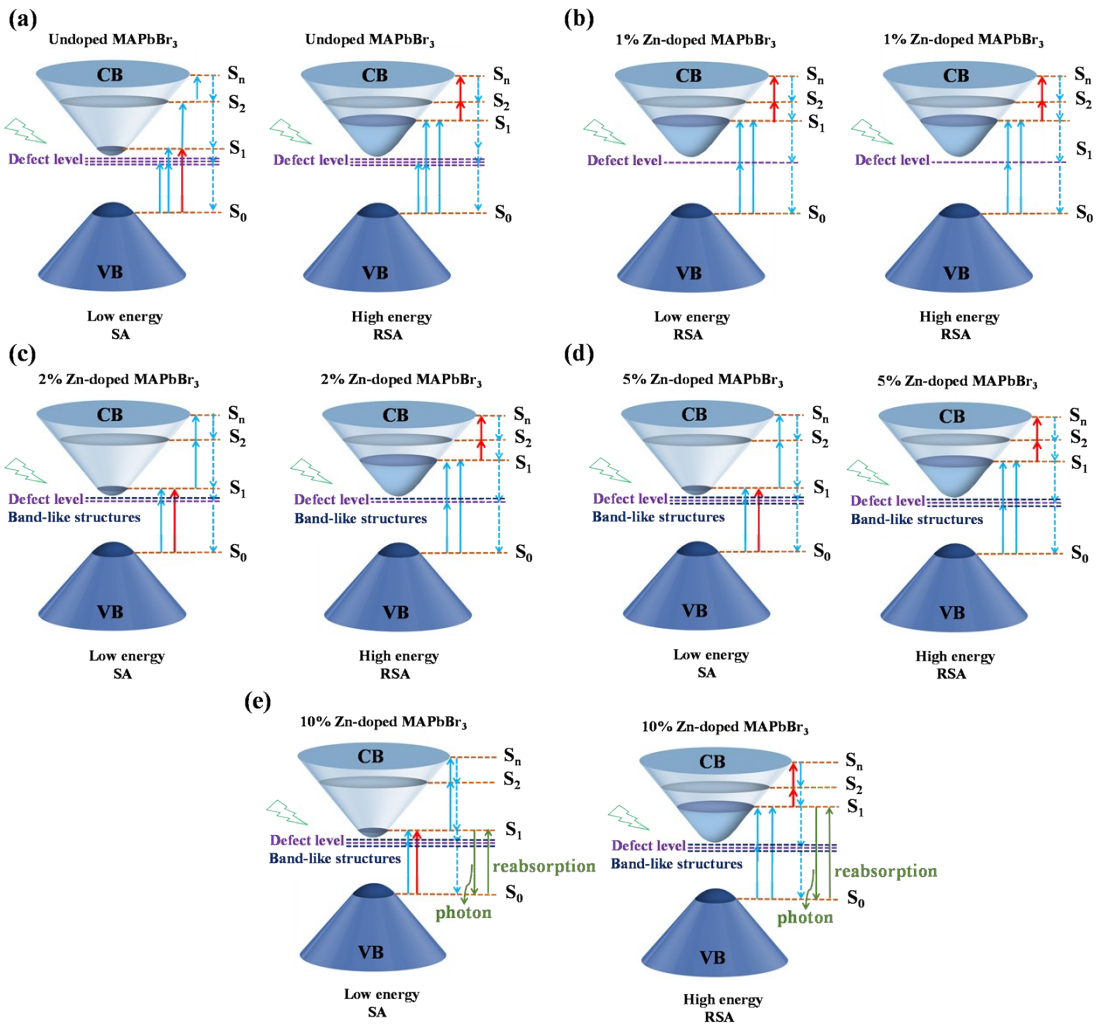

Figure S4. Four-level models of undoped and Zn-doped $MAPbBr_3$/PMMA with different doping concentrations. (a) undoped (0% Zn-doped); (b) 1% Zn-doped; (c) 2% Zn-doped; (d) 5% Zn-doped; (e) 10% Zn-doped.

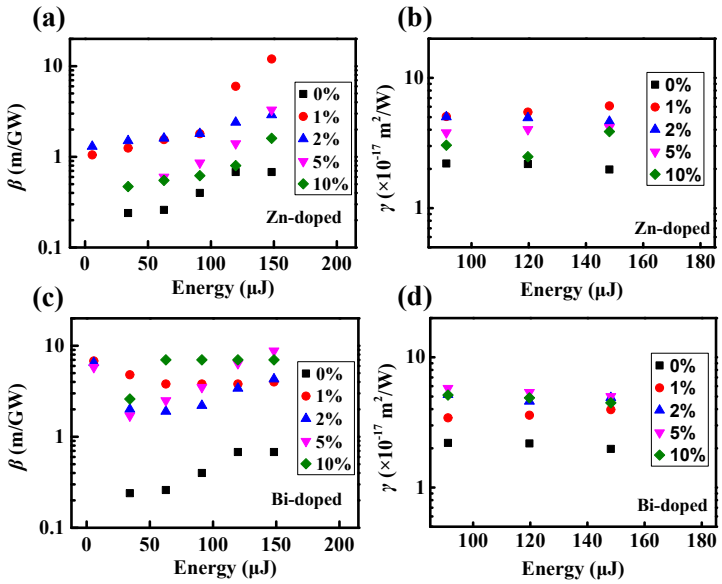

Figure S5. Dependence between β or γ and the incident pulse energy of undoped, Zn-doped and Bi-doped $MAPbBr_3$/PMMA with different doping concentration.

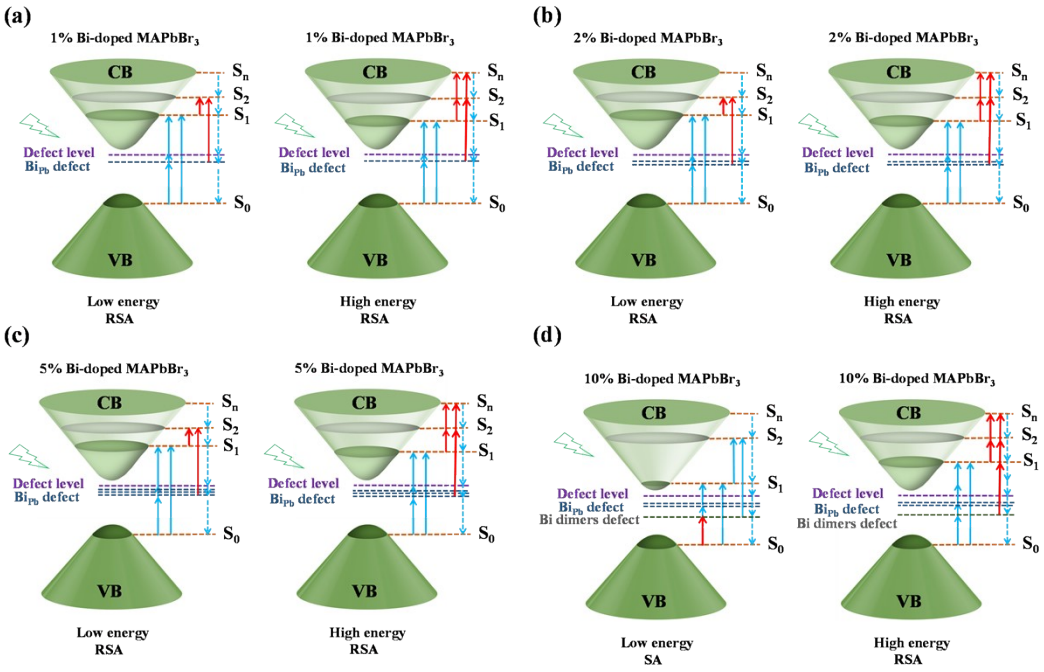

Figure S6. Four-level models of Bi-doped $MAPbBr_3$/PMMA with different doping concentrations. (a) 1% Bi-doped; (b) 2% Bi-doped; (c) 5% Bi-doped; (d) 10% Bi-doped.