Supporting information for

Two-Dimensional Beta-Lead Oxide Quantum Dots

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Table S1 The light powder density (P_λ) of incident light with various irradiation wavelengths. The gradually increased P_λ were labelled with Dark and Levels **I**, **II**, **III**, **IV**, and **VI**, respectively.

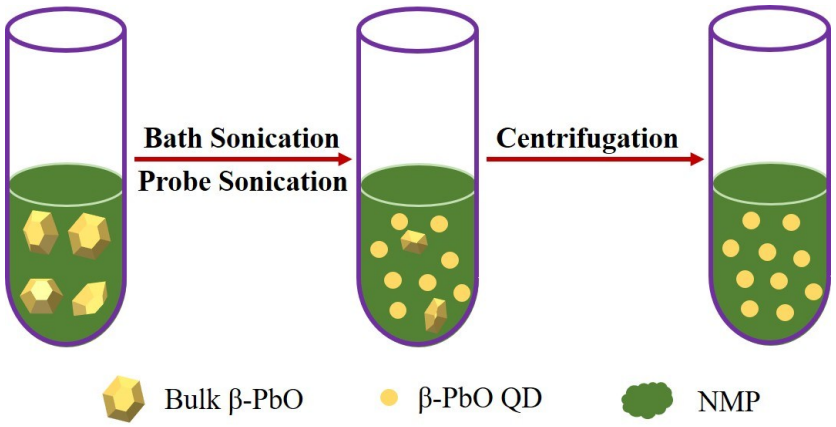
P_λ (mW cm^{-2})	Dark	Level **I**	Level **II**	Level **III**	Level **IV**	Level **VI**
Simulated light	0	26.2	53.0	83.1	118	122
350 nm	0	0.614	1.52	2.52	3.26	3.41
400 nm	0	0.637	2.04	3.57	5.22	5.35
475 nm	0	1.91	4.33	7.01	10.1	10.6
520 nm	0	2.01	3.87	5.78	8.22	8.31
650 nm	0	2.04	4.08	6.02	8.54	8.92
700 nm	0	1.15	2.42	4.08	6.11	6.14

Table S2 The photocurrent density (P_{ph}) of β-PbO QDs-based photodetectors at 400 nm laser in both Na_2SO_4 and KOH electrolytes.

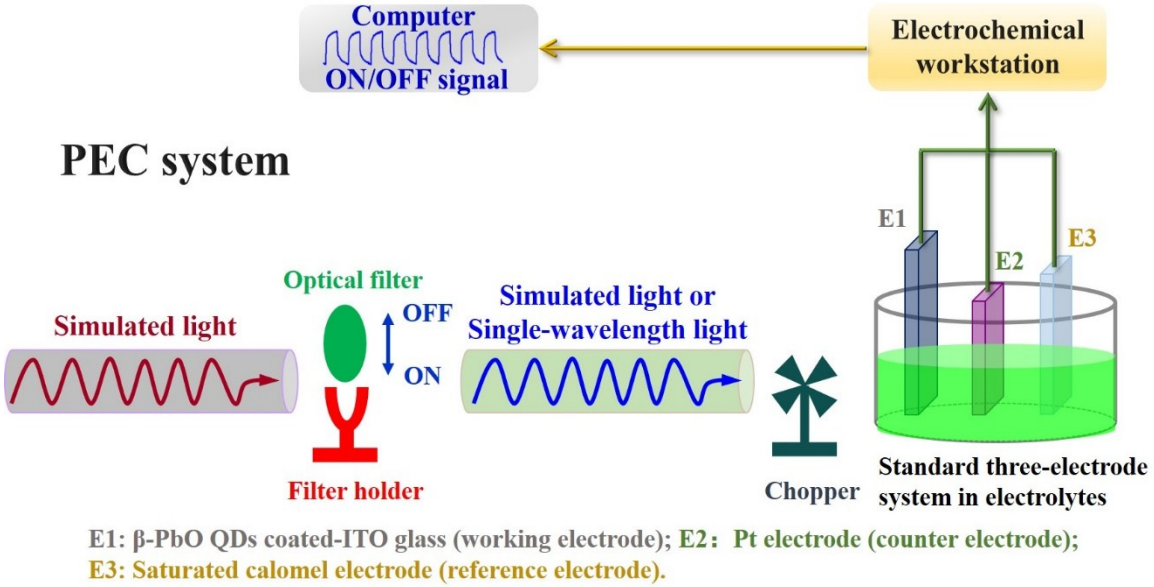
P_{ph}/μA cm^{-2}	0.01 M KOH	0.05 M KOH	0.10 M KOH	0.05 M Na_2SO_4
0	0	0	0	0
0.637 mW cm^{-2}	2.73	2.25	2.51	1.55
2.04 mW cm^{-2}	4.09	3.25	3.19	2.73
3.57 mW cm^{-2}	5.01	4.08	3.72	4.55
5.22 mW cm^{-2}	5.91	4.86	4.17	6.36
5.35 mW cm^{-2}	5.93	4.61	4.03	6.82

Table S3 The photocurrent density (P_{ph}) of β-PbO QDs-based photodetectors at different wavelengths at level **IV** in both Na_2SO_4 and KOH electrolytes.

P_{ph}/μA cm^{-2}	0.01 M KOH	0.05 M KOH	0.10 M KOH	0.05 M Na_2SO_4
350 nm (3.26 mW cm^{-2})	6.88	6.25	5.23	6.82
400 nm (5.22 mW cm^{-2})	7.01	6.48	5.17	6.36
475 nm (10.1 mW cm^{-2})	7.27	6.75	5.61	3.27
520 nm (8.22 mW cm^{-2})	3.82	4.00	4.77	1.41
650 nm (8.54 mW cm^{-2})	1.41	1.95	2.41	0.345
700 nm (6.11 mW cm^{-2})	0.227	0.832	0.682	0.0818



Scheme S1 The fabrication of β-PbO QDs by a facile LPE method.



Scheme S2 PEC system built for evaluating the photoresponse behavior of β-PbO QDs-based photodetector in different electrolytes.

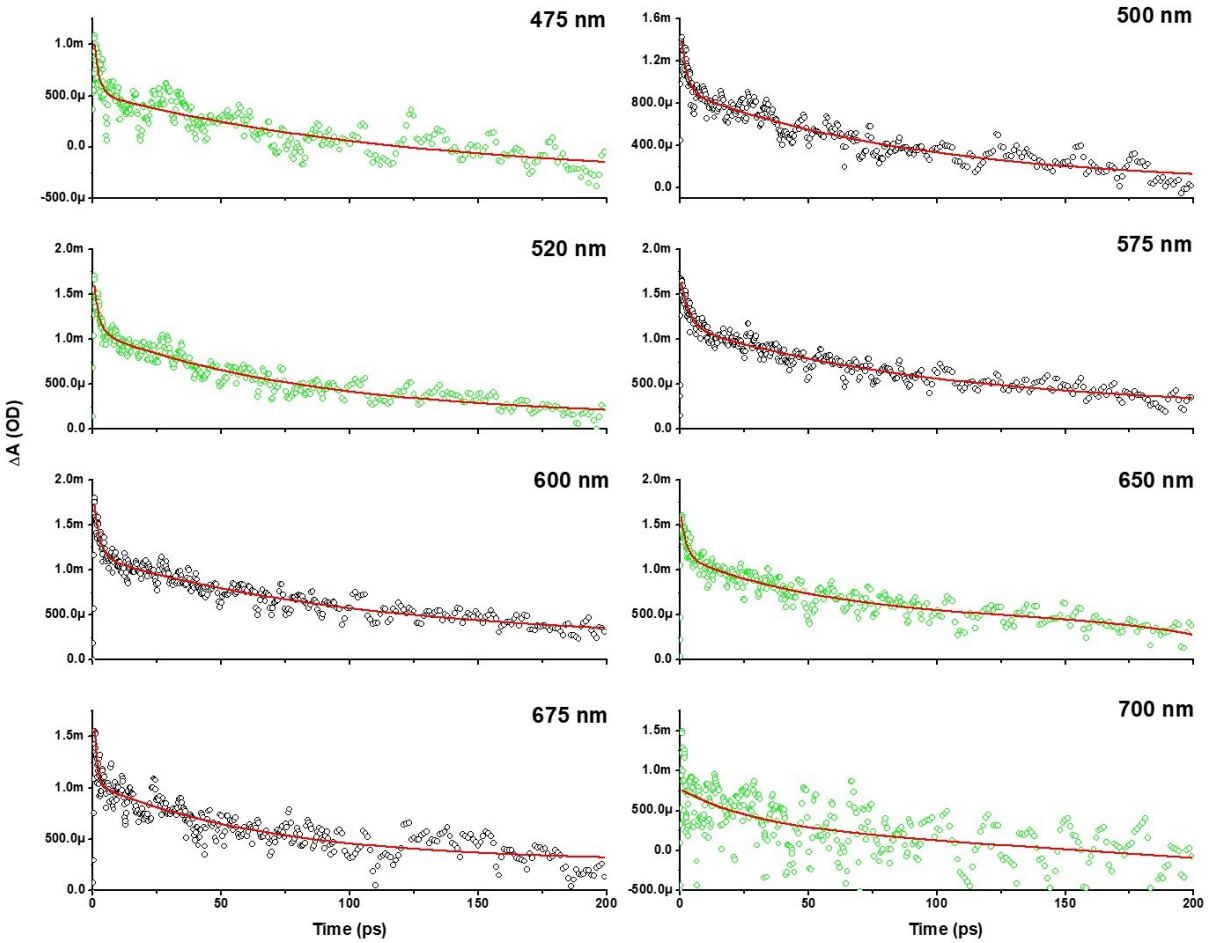


Fig. S1 Kinetics fitting results with a two-decay model at different wavelengths. Green color corresponds to the PEC test laser wavelengths.

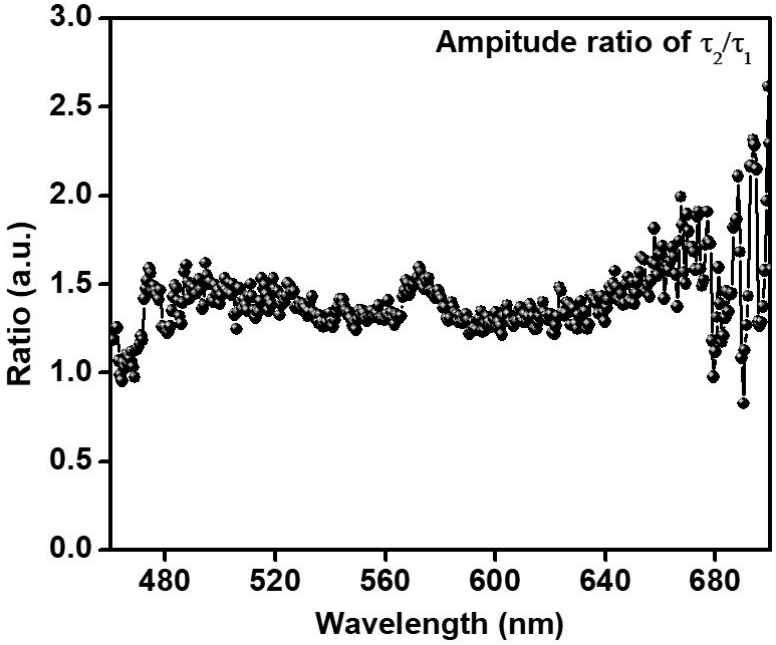


Fig. S2 The contribution ratio between decay 2 (τ_2) and decay 1 (τ_1). The determined ratio is > 1, indicating τ_2 is the major process in the decay dynamics.

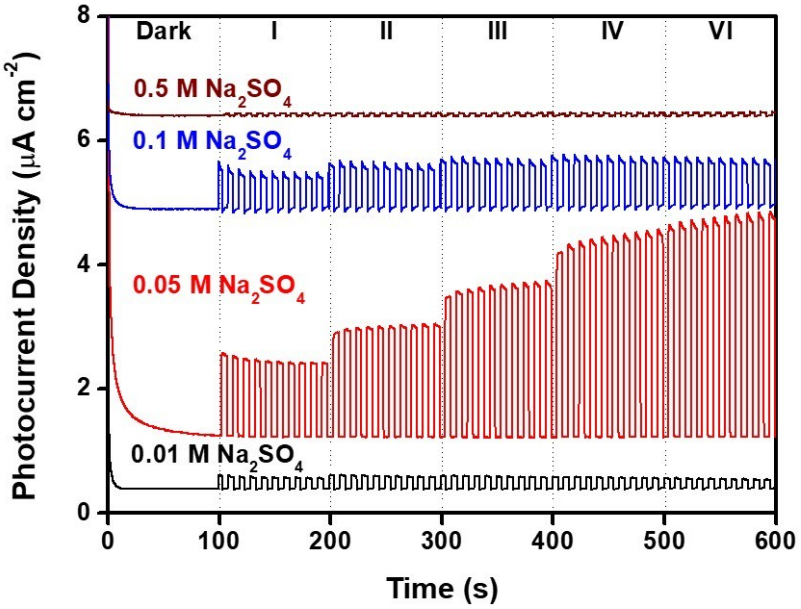


Fig. S3 Photoresponse behaviours of β-PbO QDs-based photodetector at 0.2 V under various laser power densities of dark and levels **I**, **II**, **III**, **IV** and **VI** in different Na_2SO_4 concentrations. Traces are shifted vertically for clarity.

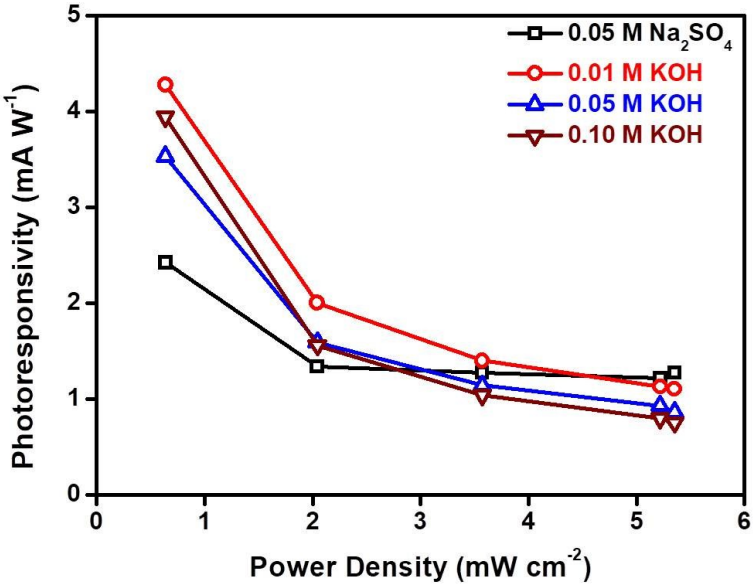


Fig. S4 Photoresponsivity (R_{ph}) of β-PbO QDs-based photodetectors as a function of laser power density at 400 nm laser in both Na_2SO_4 and KOH electrolytes.

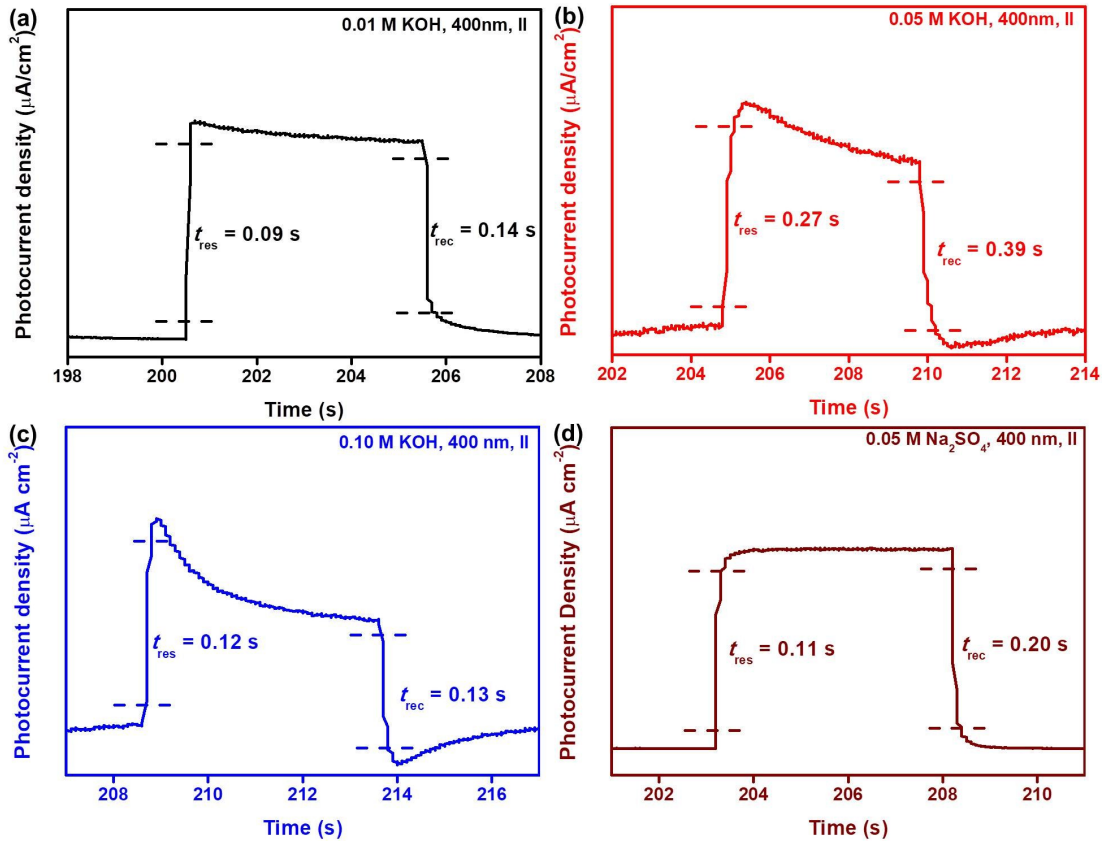


Fig. S5 The profiles of response time (t_{res}) and recovery time (t_{rec}) of β-PbO QDs-based photodetectors in different electrolytes and concerntrations at the same level **II** at 0.4 V under 400 nm laser. (a) 0.01 M KOH; (b) 0.05 M KOH; (c) 0.10 M KOH; (d) 0.05 M Na_2SO_4.