

**Electronic Supplementary Information (ESI)**  
**Integrating Piezoelectric Effect into Au/ZnO Photocatalyst**  
**for Efficient Charges Separation**

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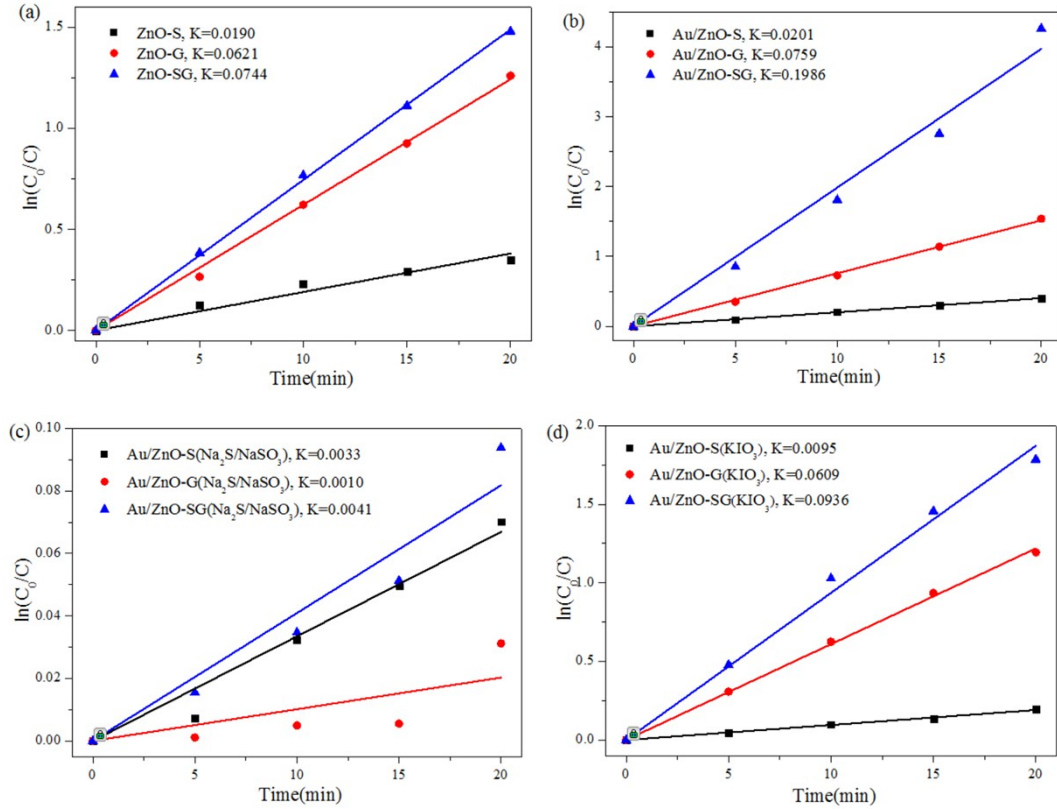


Fig.S1. (a) Photocatalytic degradation kinetic curves of RhB solution catalyzed by bare ZnO under different experimental conditions.

(b) Photocatalytic degradation kinetic curves of RhB solution catalyzed by Au/ZnO under different experimental conditions.

(c) Photocatalytic degradation kinetic curves of RhB solution catalyzed by Au/ZnO with the addition of Na<sub>2</sub>S/NaSO<sub>3</sub> under different experimental conditions.

(d) Photocatalytic degradation kinetic curves of RhB solution catalyzed by Au/ZnO with the addition of KIO<sub>3</sub> under different experimental conditions.

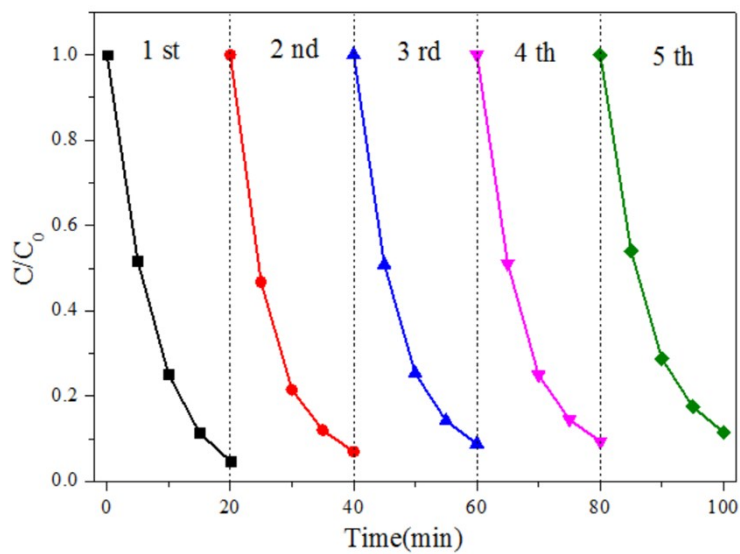


Fig.S2. The cyclic degradation curves of RhB solution catalyzed by Au/ZnO under simultaneous light irradiation and ultrasonication.

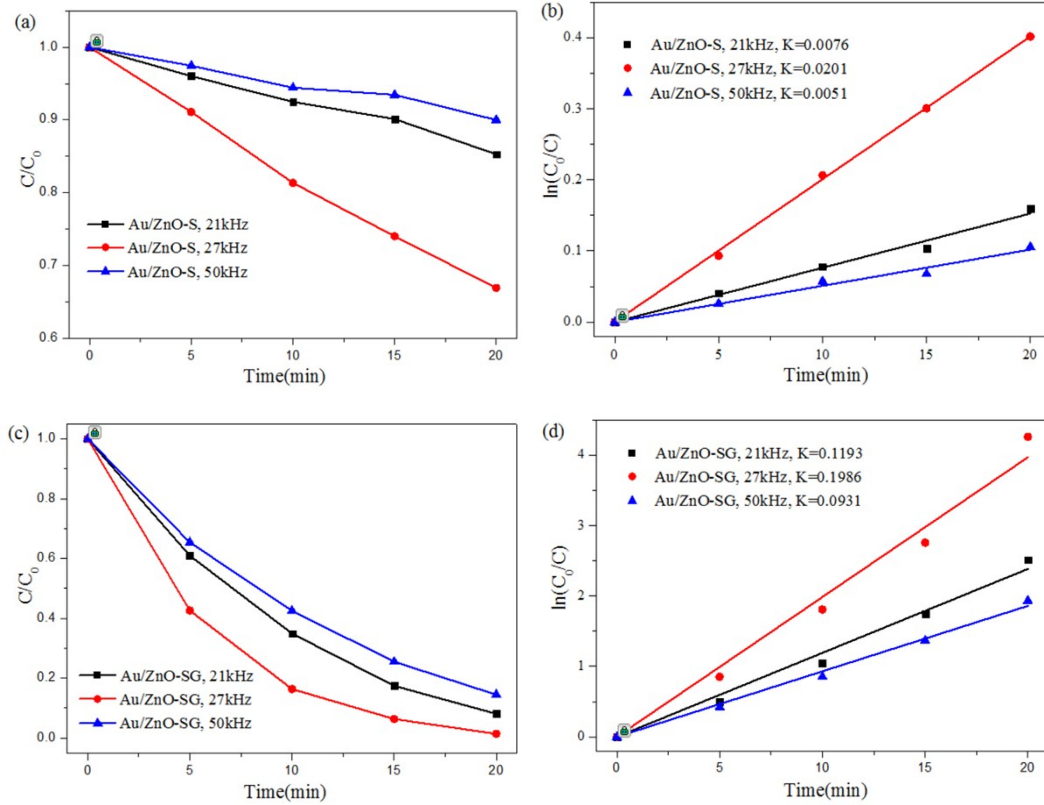


Fig.S3. (a) RhB photocatalytic degradation rate of ZnO nanorod composites with time under different irradiation conditions.

(b) Photocatalytic degradation kinetic curves of RhB solution catalyzed by ZnO under different irradiation conditions.

(c) RhB photocatalytic degradation rate of Au/ZnO nanorod composites with time under different irradiation conditions.

(d) Photocatalytic degradation kinetic curves of RhB solution catalyzed by Au/ZnO under different irradiation conditions.

Table S1. Photodegradation K values of RhB at 20 min with the Au/ZnO nanorods composite under different irradiation conditions.

K	Au/ZnO-S-21kHz	Au/ZnO-S-27kHz	Au/ZnO-S-50kHz
$K_S$	0.0076	0.0201	0.0051
$K_G$	0.0759	0.0759	0.0759
$K_{SG}$	0.1193	0.1986	0.0931
$K_{SG}/(K_S + K_G)$	1.4281	2.0690	1.1488