

Electronic Supplementary Information for:  
**Visible-light-sensitive Na-doped p-type flower-like ZnO  
photocatalysts synthesized via a continuous flow microreactor**

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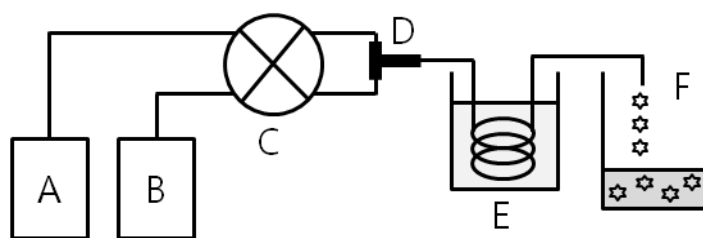
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**Table S1** The results of Hall measurement for pure ZnO and Na:ZnO

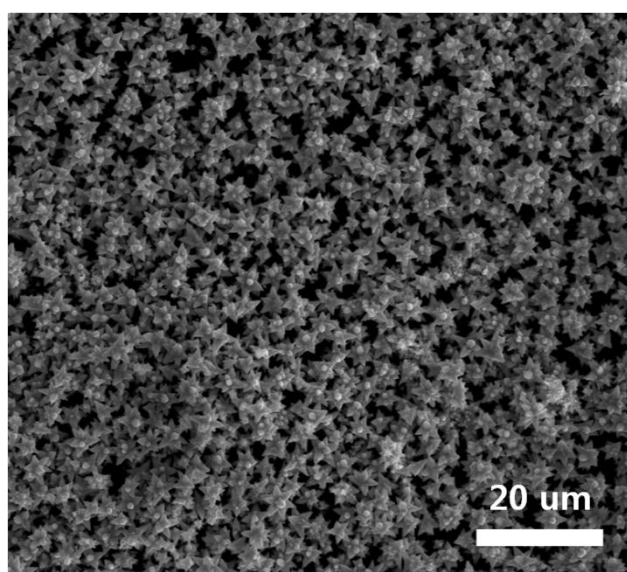
<b>ZnO-CP</b>			
Bulk concentration =	-5.828E+14 [ /cm <sup>3</sup> ]	Mobility =	3.244E-1 [ cm <sup>2</sup> / Vs ]
Sheet Concentration =	-2.914E+10 [ /cm <sup>2</sup> ]	Average Hall Coefficient =	-1.071E+4 [ cm <sup>3</sup> / C ]
Resistivity =	3.302E+4 [ Ω cm ]	A-C Cross Hall Coefficient =	-7.923E+3 [ cm <sup>3</sup> / C ]
Conductivity =	3.029E-5 [ 1 / Ω cm ]	B-D Cross Hall Coefficient =	-1.350E+4 [ cm <sup>3</sup> / C ]
Magneto-Resistance =	8.044E+6 [ Ω ]	Ratio of Vertical / Horizontal =	-3.696E-1

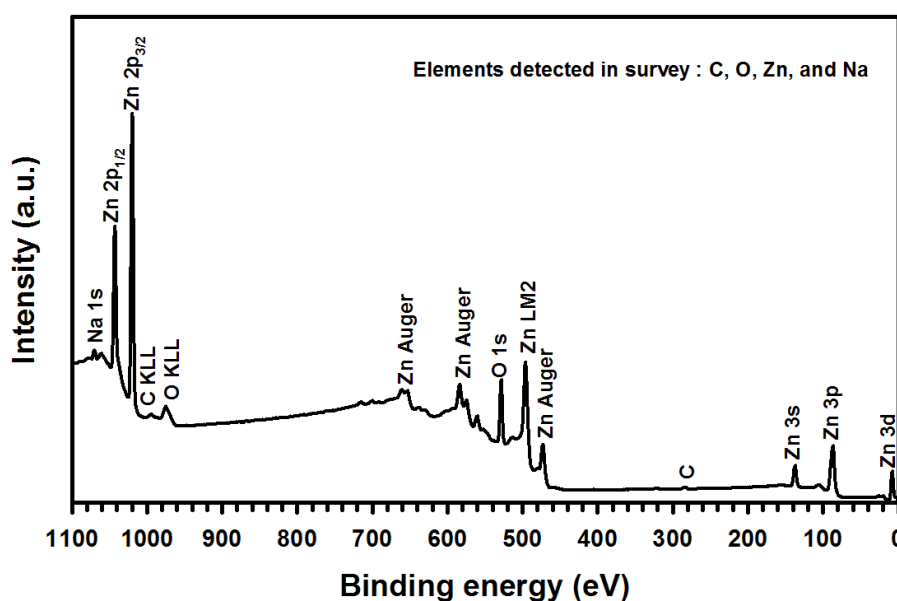
<b>Na:ZnO-CFMR</b>			
Bulk concentration =	7.904E+13 [ /cm <sup>3</sup> ]	Mobility =	2.184E+2 [ cm <sup>2</sup> / Vs ]
Sheet Concentration =	3.952E+9 [ /cm <sup>2</sup> ]	Average Hall Coefficient =	7.898E+4 [ cm <sup>3</sup> / C ]
Resistivity =	3.616E+2 [ Ω cm ]	A-C Cross Hall Coefficient =	2.123E+4 [ cm <sup>3</sup> / C ]
Conductivity =	2.765E-3 [ 1 / Ω cm ]	B-D Cross Hall Coefficient =	1.367E+5 [ cm <sup>3</sup> / C ]
Magneto-Resistance =	2.920E+6 [ Ω ]	Ratio of Vertical / Horizontal =	9.484E-1



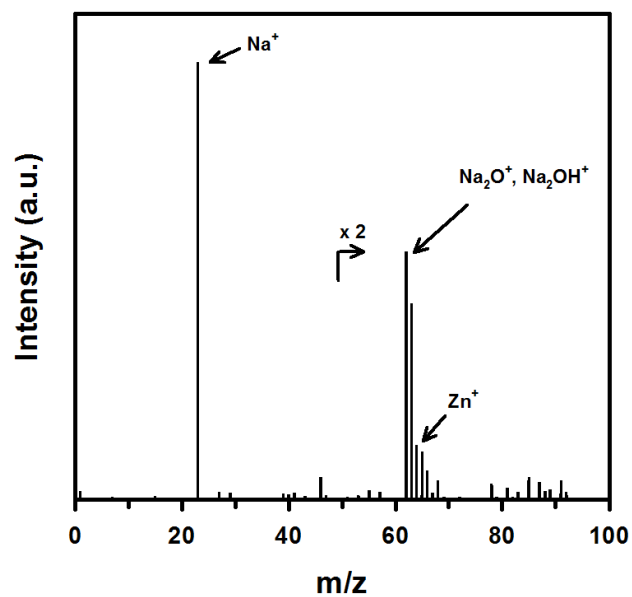
**Fig. S1** Schematic diagram of the continuous flow microreactor (CFM) system: A) Mixture solution of  $\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$  and  $\text{HAuCl}_4 \cdot 3\text{H}_2\text{O}$ , B)  $\text{Na}_2\text{CO}_3$ , C) Peristaltic pump, D) Micro T-mixer, E) Oil bath, F) Collecting zone.



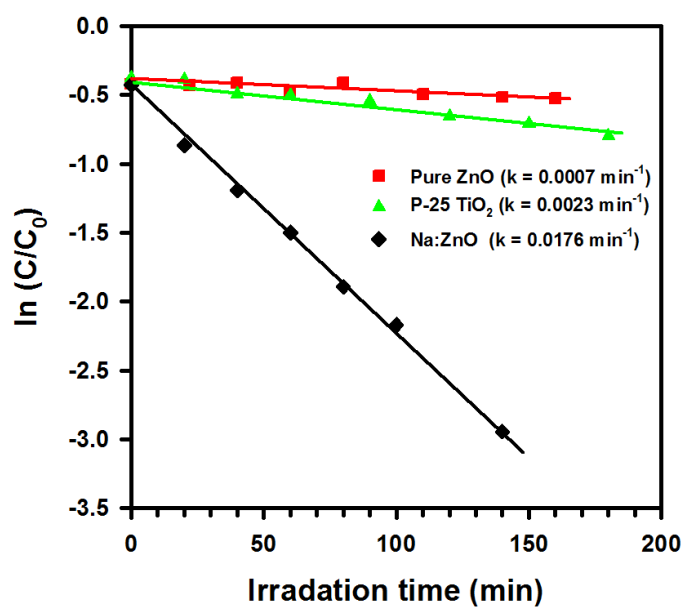
**Fig. S2** FE-SEM image of flower-like Na:ZnO synthesized by the CFM system.



**Fig. S3** XPS survey spectrum of Na:ZnO synthesized by the CFM system.



**Fig. S4** Positive ToF-SIMS spectrum of Na:ZnO synthesized by the CFM system.



**Fig. S5** A plot of  $\ln(C/C_0)$  vs irradiation time under simulated sunlight of pure ZnO, P-25  $\text{TiO}_2$ , and Na:ZnO samples.