

**Supporting Information**

**Fabrication and improved photoelectrochemical properties  
of transferred GaN-based thin film with InGaN/GaN layers**

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**This file includes:**

**Supplementary Figures S1-S3.**

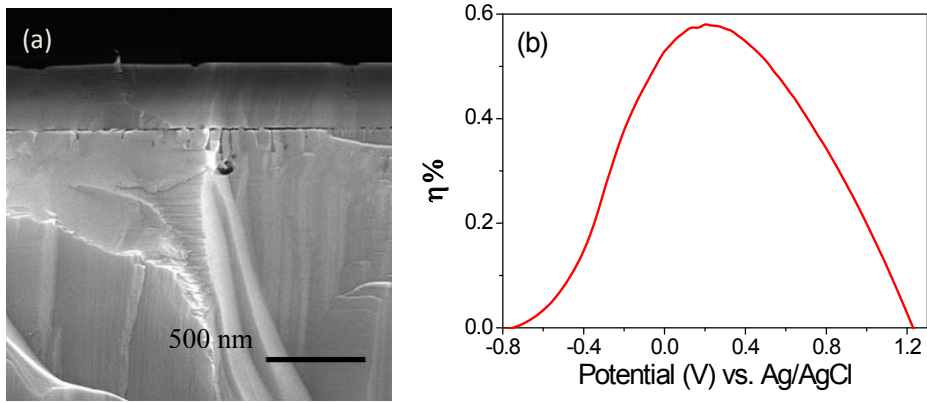
**Fig. S1** The only etched InGaN/GaN layer of GaN-based film for (a) cross-sectional SEM image and (b) photoconversion efficiency.

**Fig. S2** Photoconversion efficiency as a function of applied potential of the plane n-Si.

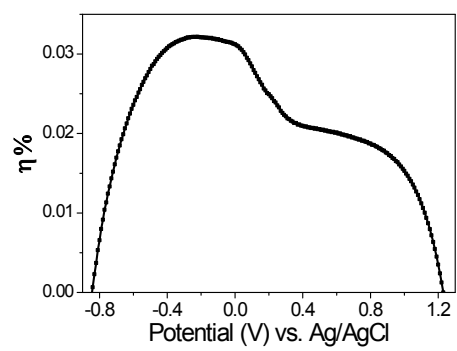
**Fig. S3** The XPS overview spectrum of the etched sample before and after PEC water splitting at 0.15 V for 4h.

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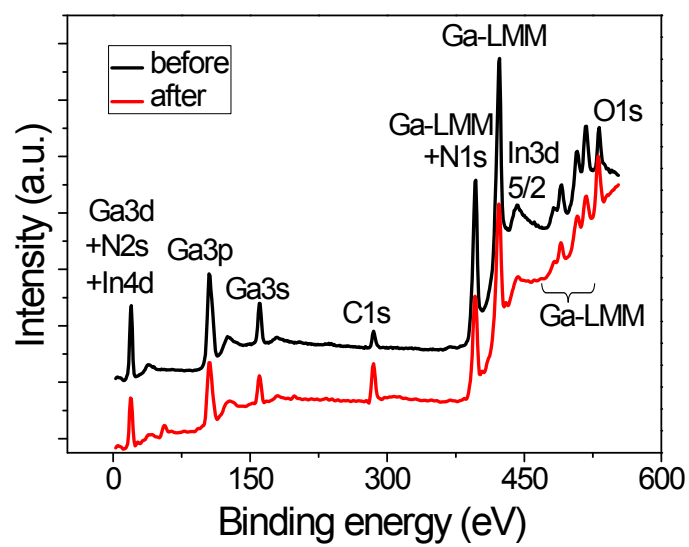
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**Fig. S1** The only etched InGaN/GaN layer of GaN-based film for (a) cross-sectional SEM image and (b) photoconversion efficiency.



**Fig. S2** Photoconversion efficiency as a function of applied potential of the plane n-Si.



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