Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

The Effect of N,N-dimethylformamide on $MAPbI_3$ Nanowires for Application in Flexible Photodetectors

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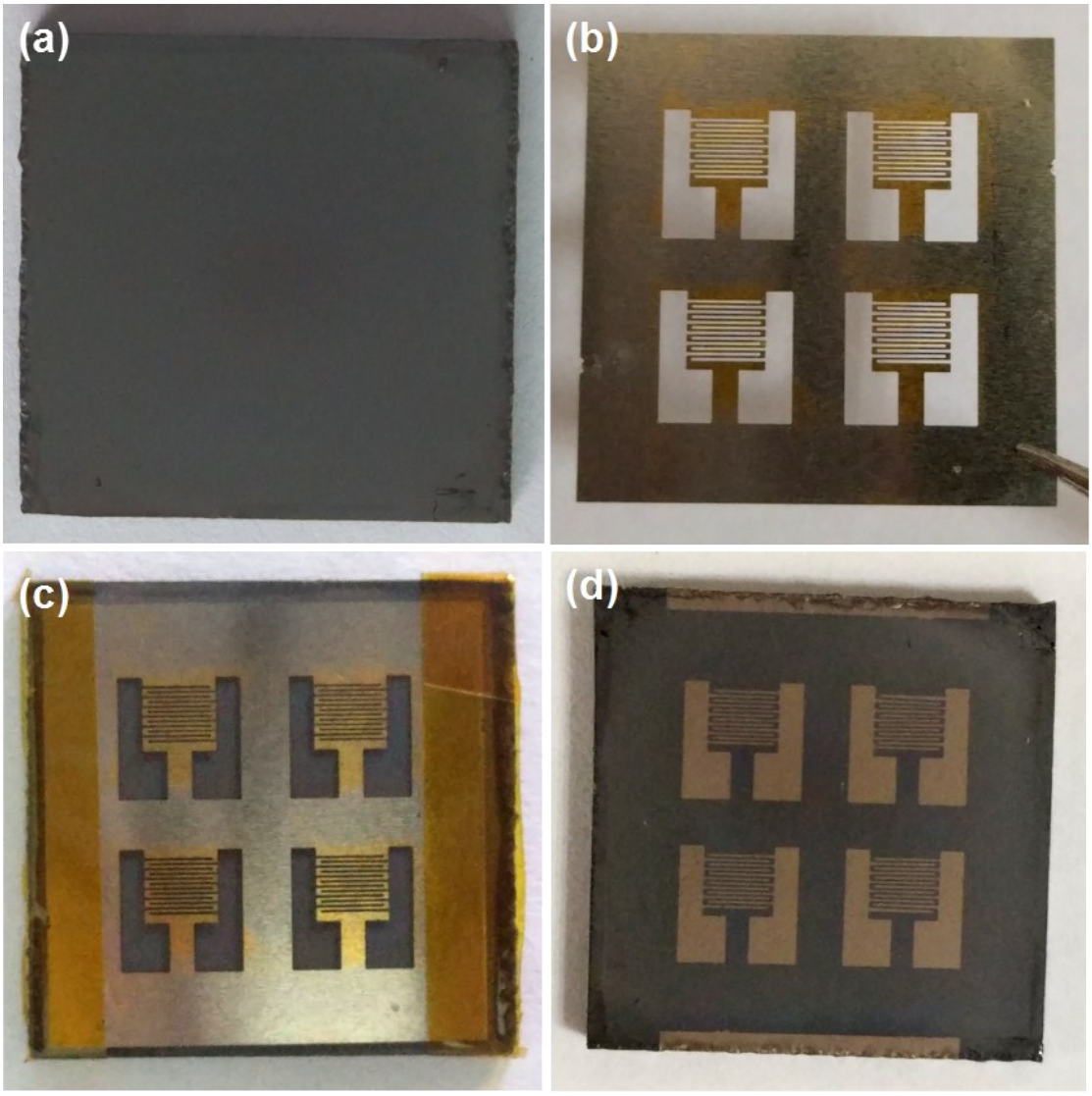

Figure S1 (a) The photograph of the $MAPbI_3$ NW prepared on the glass substrate. (b) The photograph of the template of the interdigital electrodes. (c) The photograph of the sample based on $MAPbI_3$ NW covered with the template of the interdigital electrodes. (d) The photograph of the fabricated planar PD based on $MAPbI_3$ NW.

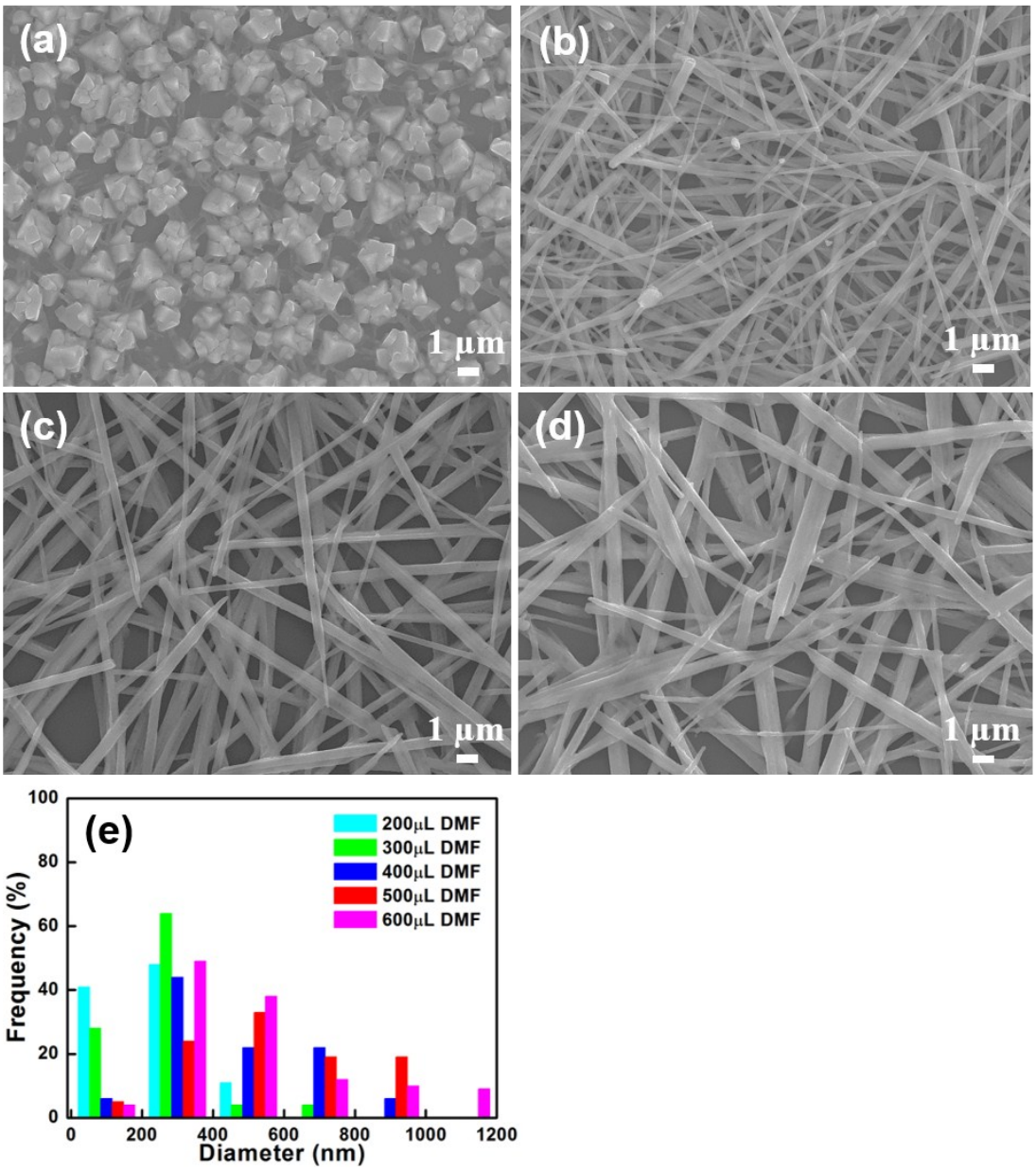

Figure S2 SEM images of $MAPbI_3$ PVK prepared by a two-step spin-coating method with the solution of MAI in isopropanol (35 mg/5 mL) including various DMF content. (a) 50 μL DMF. (b) 300 μL DMF. (c) 400 μL DMF. (d) 600 μL DMF. (e) The corresponding diameter distributions of the NW which is counted in 5 μm × 5 μm areas. $MAPbI_3$ PVK was deposited on the glass substrate.

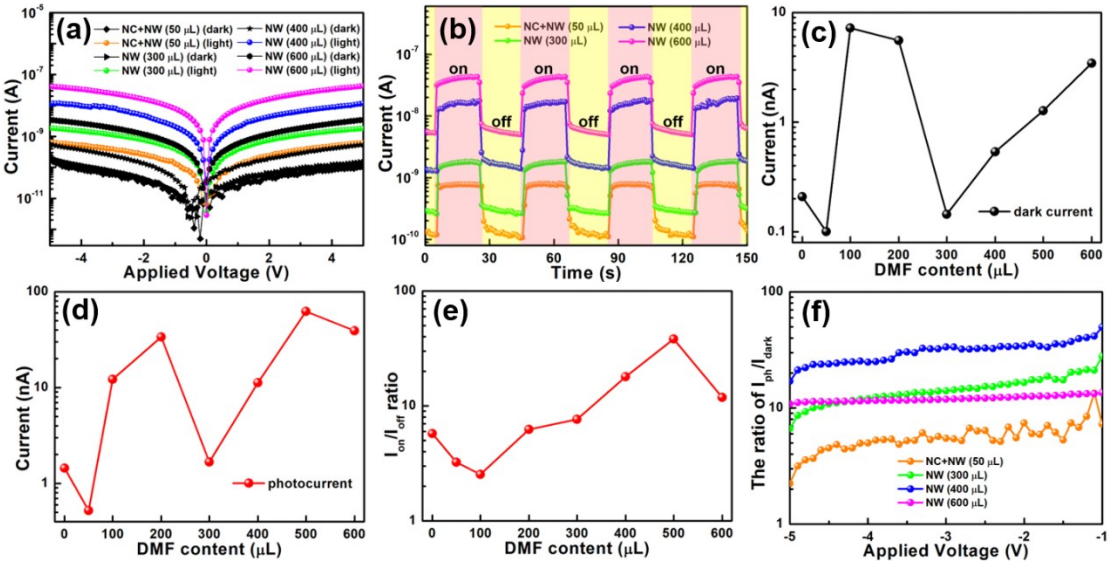

Figure S3 The performances of the PDs based on $MAPbI_3$ PVK prepared with the solution of MAI in IPA (35 mg/5 mL) including various DMF content. (a) I-V logarithm curves of the PDs in dark and under ultraviolet light irradiation (2.00 mW/cm^2). (b) I-T logarithm curves of the PDs at 5 V bias under ultraviolet light irradiation (2.00 mW/cm^2). (c) The dark current-DMF content curve of the PDs at 5V bias. (d) The photocurrent-DMF content curve of the PDs at 5V bias under ultraviolet light irradiation (2.00 mW/cm^2). (e) The I_{on}/I_{off} ratio-DMF content curve of the PDs. (f) The ratio of I_{ph}/I_{dark} curves of the PDs under different sweep voltage.

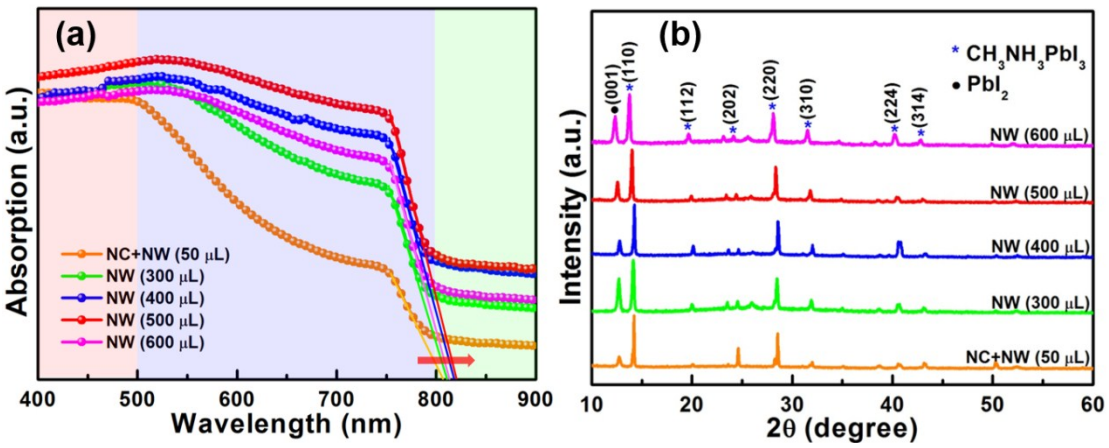

Figure S4 (a) UV-vis absorption spectra and (b) XRD patterns of $MAPbI_3$ PVK prepared by a two-step spin-coating method with the solution of MAI in IPA (35 mg/5 mL) including various DMF content. $MAPbI_3$ PVK was deposited on the glass substrate.

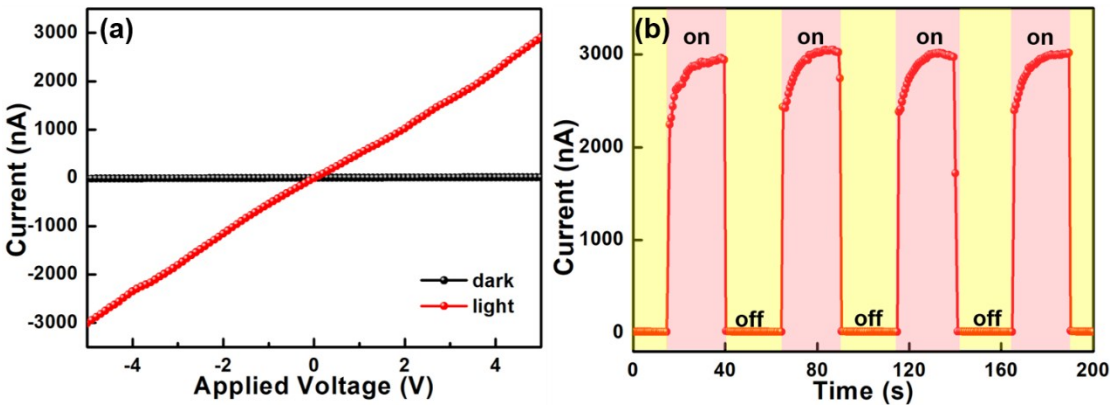

Figure S5 The performances of the PD based on $MAPbI_3$ PVK NW prepared with the solution of MAI in IPA (35 mg/5 mL) including 500 μL DMF. (a) I-V curve of the PD in the dark and under ultraviolet light irradiation (4.76 mW/cm^2). (b) I-T curve of the PD at 5 V under ultraviolet light irradiation (4.76 mW/cm^2).

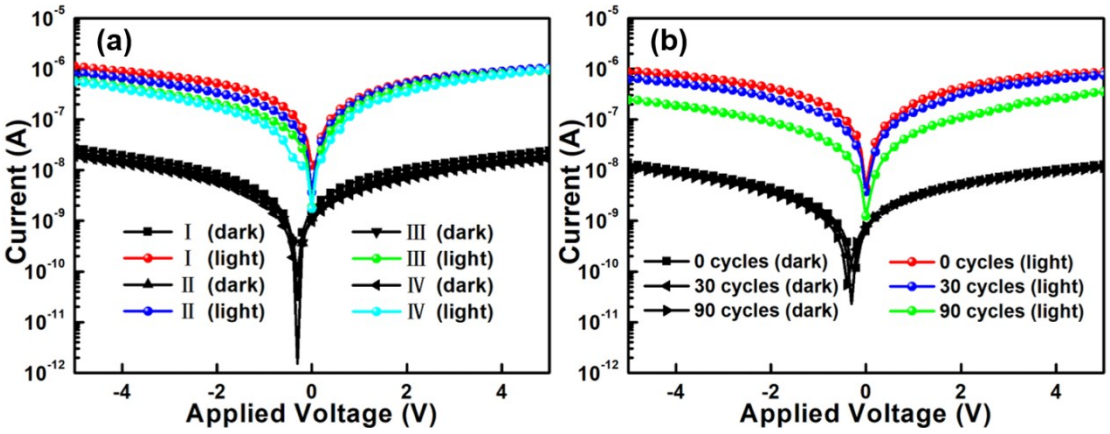

Figure S6 The performances of the flexible PD with bend. (a) The corresponding I-V logarithm curves of the flexible PD when bent with different curvatures under ultraviolet light irradiation (2.00 mW/cm^2). (b) The corresponding I-V logarithm curves of the flexible PD after 0, 30 and 90 cycles of bending under the fixed bending state for each bending under ultraviolet light irradiation (2.00 mW/cm^2).

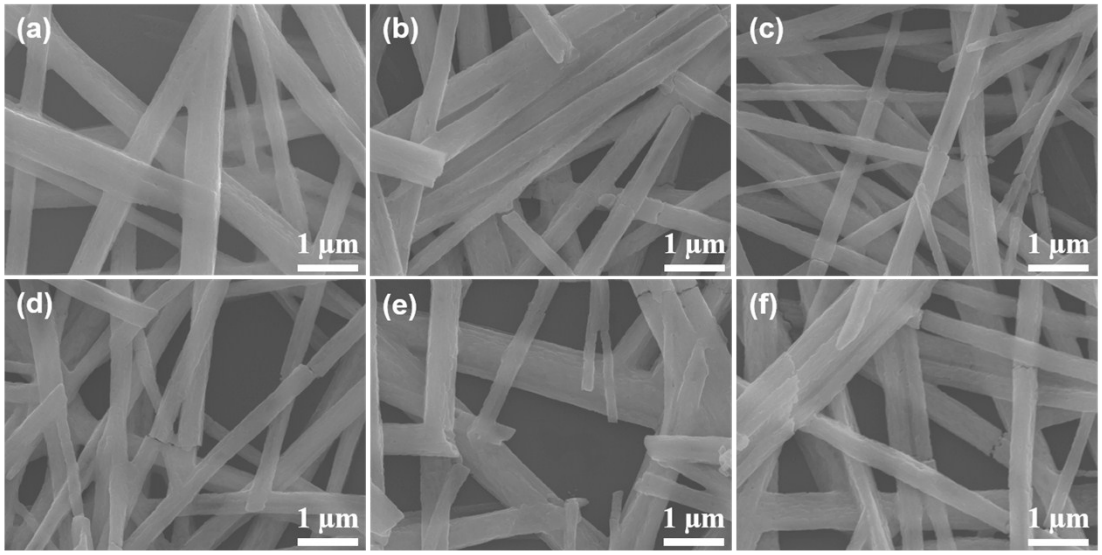

Figure S7 SEM images of $MAPbI_3$ PVK NW formed on the flexible PET substrate with different bending cycles under the fixed bending state (the insets in Figure 8(b)) for each bending. (a) 0 cycles. (b) 30 cycles. (c) 60 cycles. (d) 90 cycles. (e) 120 cycles. (f) 150 cycles.