

**(Supplementary Information)**

**Scanning atmospheric-pressure plasma jet treatment (with peak temperature of 500°C) on nickel oxide for p-i-n structure perovskite solar cells**

Chieh-I Lin<sup>1,2</sup>, Jui-Hsuan Tsai<sup>1,2</sup>, Jian-Zhang Chen<sup>1,2</sup>

<sup>1</sup>Graduate Institute of Applied Mechanics, National Taiwan University, Taipei City 10617, Taiwan

<sup>2</sup>Advanced Research Center for Green Materials Science and Technology, National Taiwan University, Taipei City 10617, Taiwan

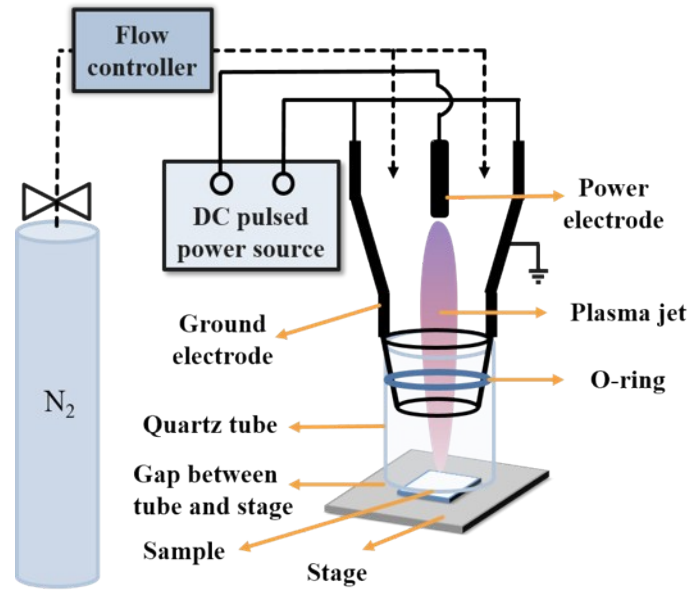


Figure S1. Schematic of APPJ setup

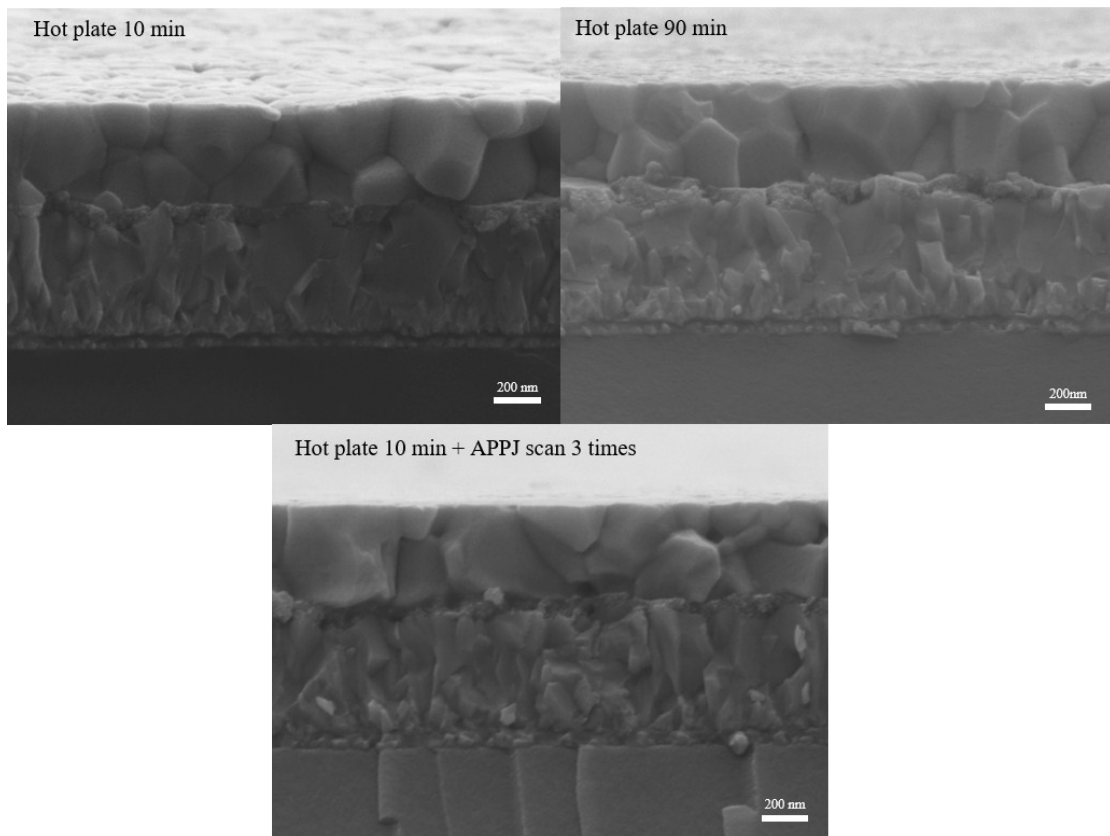


Figure S2. SEM of cross section of films.

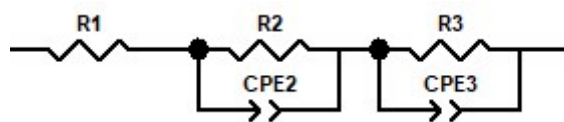


Figure S3. EIS fitting model

Table S1. XPS deconvolution for C 1s orbital.

%	C-C	C-N	C-O	C=O	C(O)O
Hot plate 10 min	74.16	12.21	2.61	7.95	3.07
Hot plate 10 min + three APPJ scans	73.1	2.63	15.04	6.68	2.55
Hot plate 90 min	74.26	9.22	3.56	6.46	6.5

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Table S2. XPS deconvolution for Ni 2p<sub>3/2</sub> orbital.

%	Ni	NiO	Ni(OH) <sub>2</sub>	NiAc <sub>2</sub>	NiOOH
Hot plate 10 min	1.04	45.56	19.27	5.99	20.56
Hot plate 10 min + three APPJ scans	0.97	49.3	20.2	0.83	22.61
Hot plate 90 min	0.99	46.99	20.38	2.41	22.06

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