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

Supplementary Information

In-situ Formation of NiO on Ni Foam Prepared with a Novel Leaven Dough Method as an Outstanding Electrocatalyst for Oxygen Evolution Reaction

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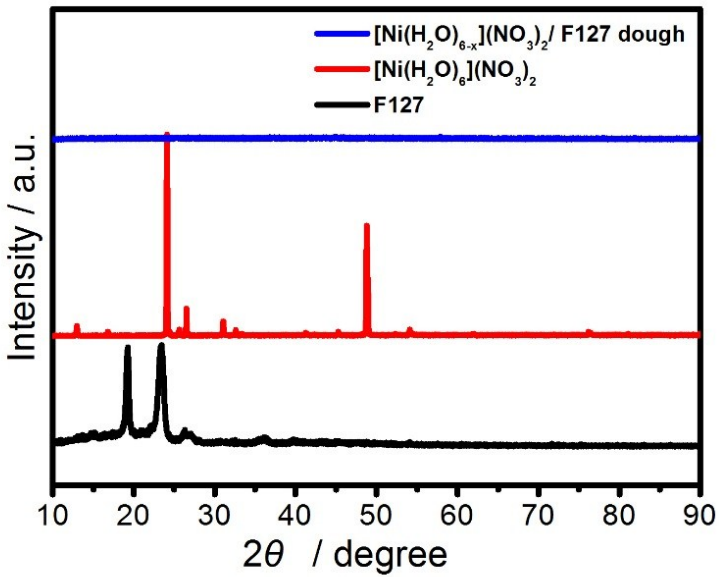

Figure S1. XRD patterns of F127, $[Ni(H_2O)_6](NO_3)_2$, and $[Ni(H_2O)_{6-x}](NO_3)_2$/F127 dough.

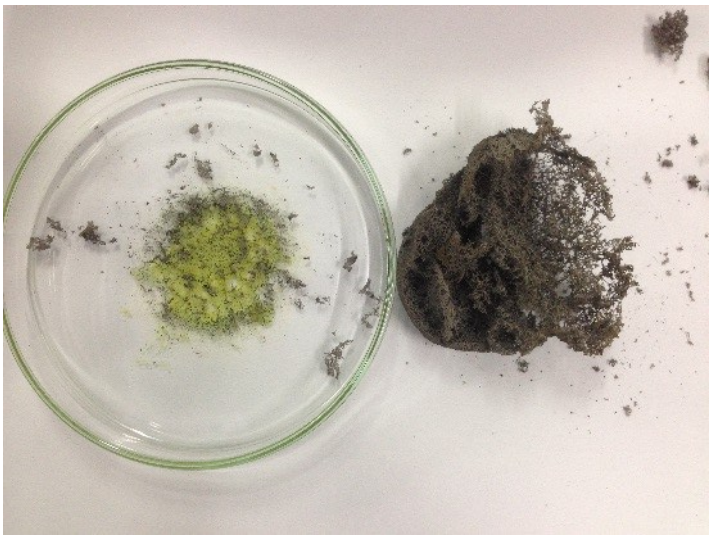

Figure S2. Photo of Ni foam and green residues on Petri dish obtained through calcination of $[Ni(H_2O)_{6-x}](NO_3)_2$/F127 dough at 200 °C for 1 h in air.

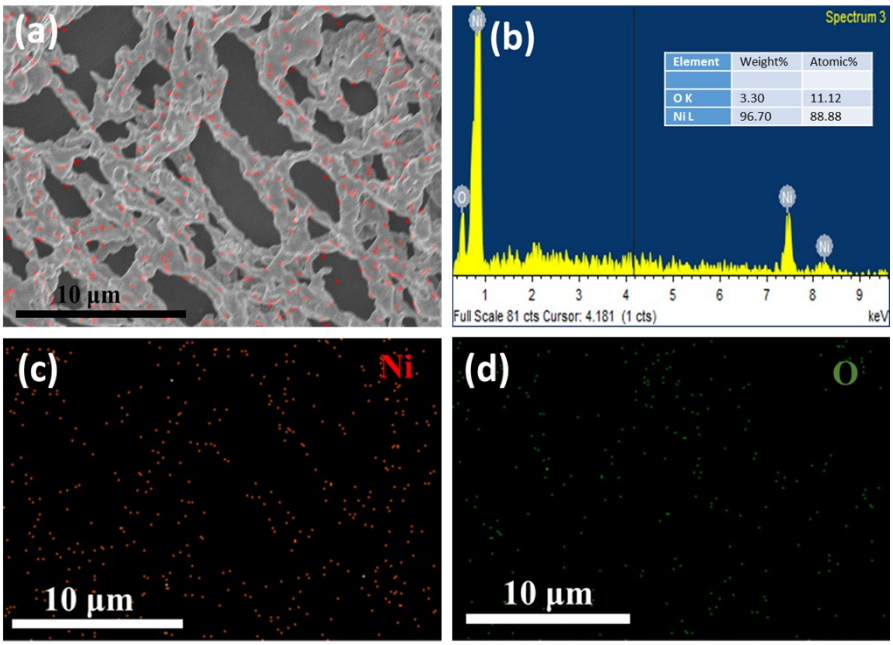

Figure S3. (a) SEM image of Ni foam, (b) EDX spectrum of Ni foam and elemental mapping images of (c) Ni and (d) O.

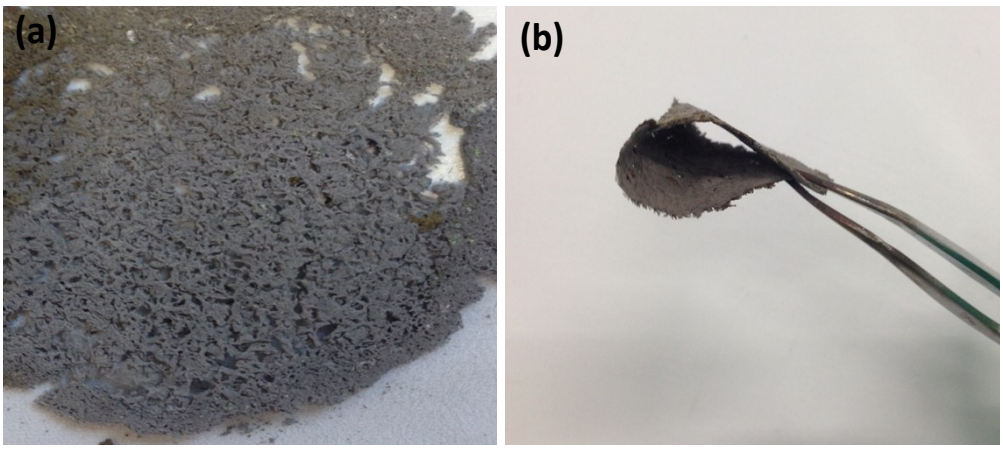

Figure S4. Photos of Ni foam (a) after being compressed into a disk and (b) the disk being further bent.

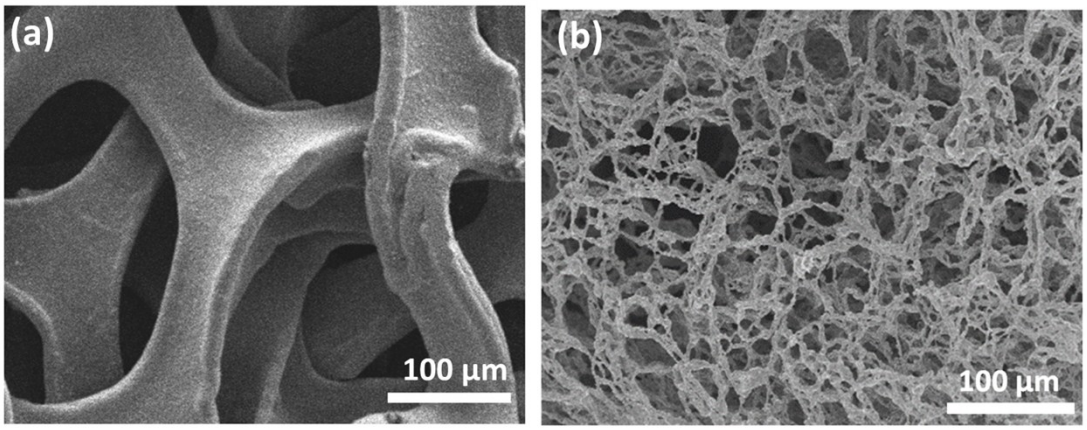

Figure S5. SEM images of (a) commercial Ni foam and (b) as-prepared Ni foam.

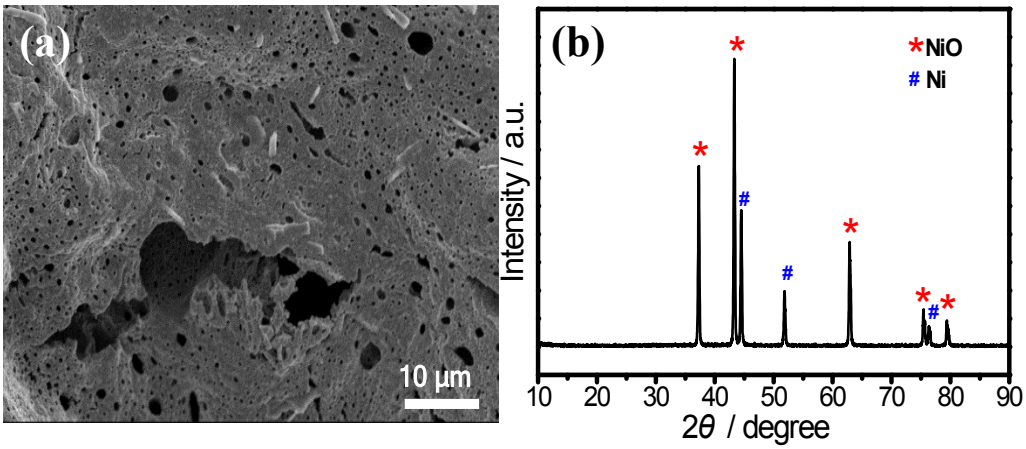

Figure S6. (a) SEM image and XRD pattern of Ni foam prepared at precursor composition of 0.5 g F127 and 2.9 g $[Ni(H_2O)_6](NO_3)_2$.

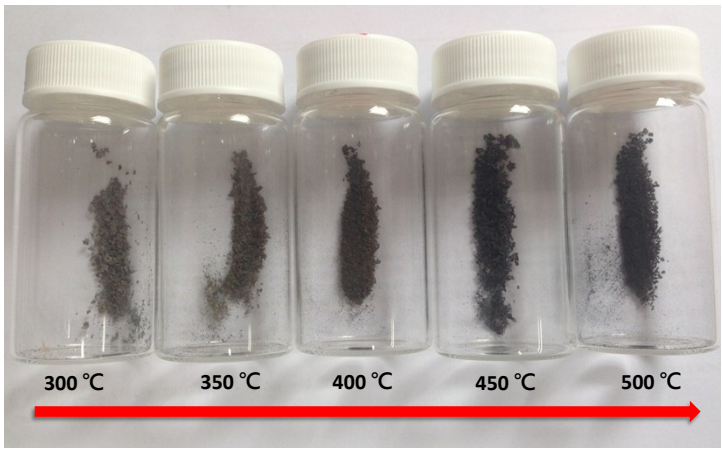

Figure S7. Photos of NiO/Ni prepared at calcination temperatures from 300 to 500 °C.

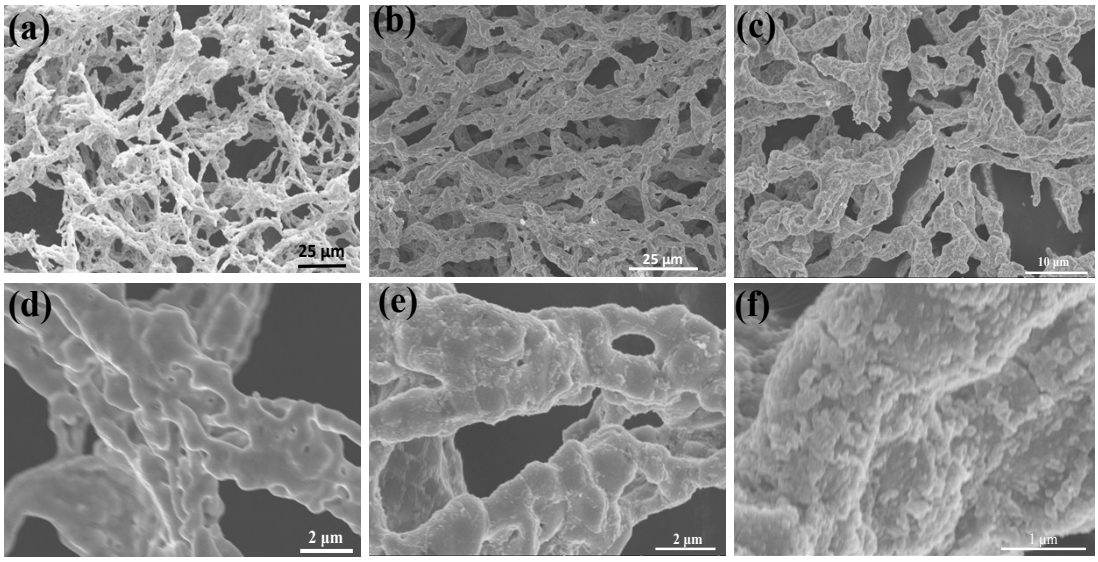

Figure S8. SEM images and zoom-in images of (a,d) NiO/Ni-400, (b,e) NiO/Ni-450, and (c,f) NiO/Ni-500.

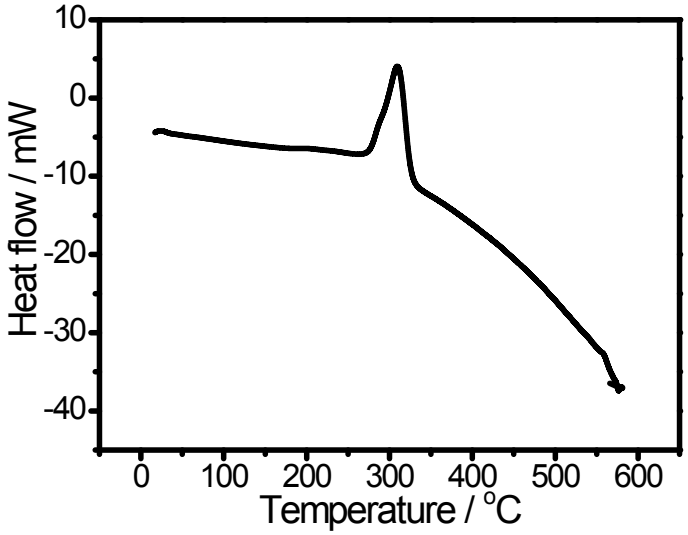

Figure S9. DTA curve of green residues.

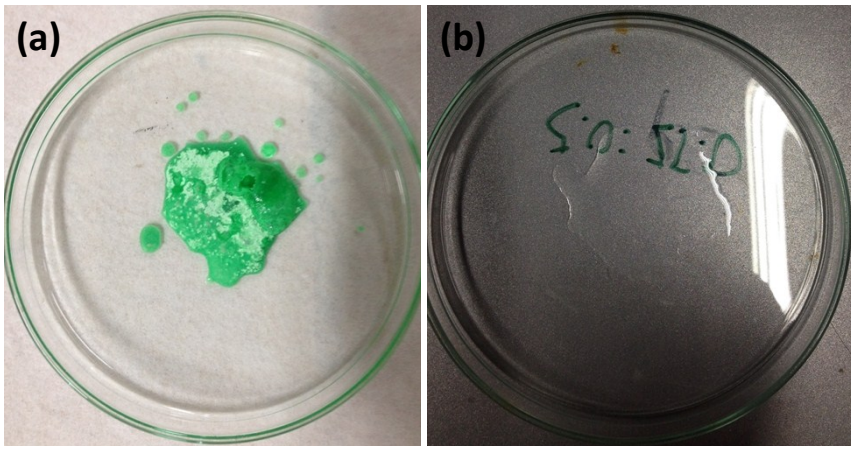

Figure S10. Photos of (a) $[Ni(H_2O)_6](NO_3)_2$ and (b) F127 in oven set at 80 °C after 12 h.

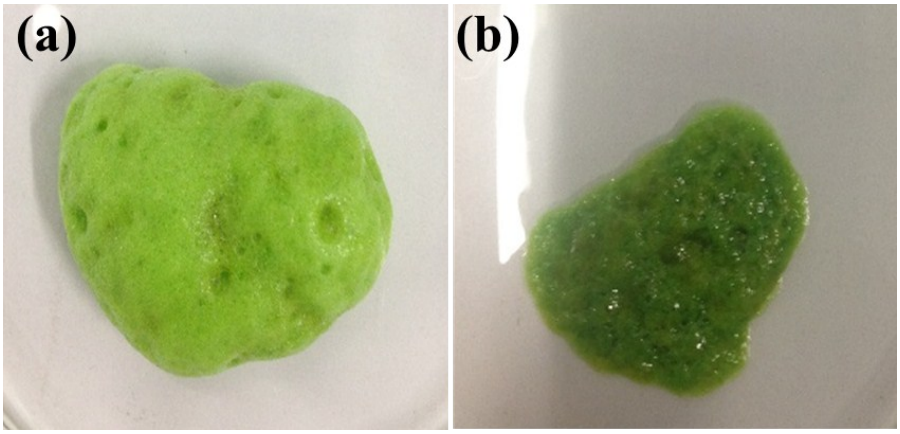

Figure S11. Photos of $[Ni(H_2O)_{6-x}](NO_3)_2$/F127 dough (a) at 80 °C and (b) at room temperature for 3 h.

Table S1. Comparison of η_{onset}, η_{10}, and Tafel slope: present work *vs.* literature

Catalysts	**η_{onset} / mV**	**η_{10} / mV**	**Tafel slope / mV/dec**	**Reference**
NiO/Ni-350	268	345	53	This work
3D NiO/Ni foam		390	80	[S1]
NiO nanowire/FTO	355	363		[S2]
NiO sheet/carbon cloth	295		116	[S3]
Ni foam/porous carbon/anodized Ni	294	534	-	[S4]
RuO_2		266	62	[S5]
IrO_2/Ni foam		310	79	[S6]
MnO_2/Ni foam	270	287	86	[S6]
Co_3O_4/mildly oxidized multiwalled carbon nanotubes	280	390	-	[S7]
$CoFe_2O_4$/graphene	274	464	-	[S8]
$NiCo_2O_4$-graphene	328	458	161	[S9]

Supporting Information References

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