Supporting Information

Facile synthesis of Ru/N-C as an efficient and cost-effective electrocatalyst for hydrogen evolution

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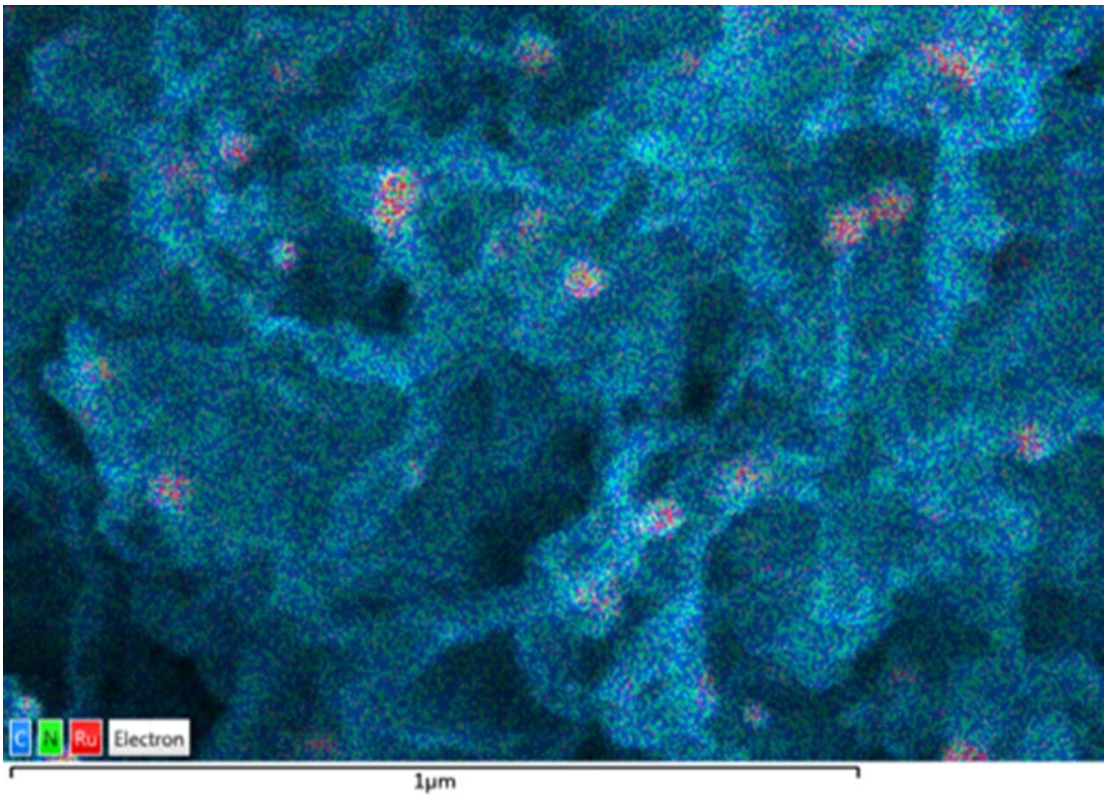

Figure S1. Image of Ru-N-C-6% after superimposing the of element mapping.

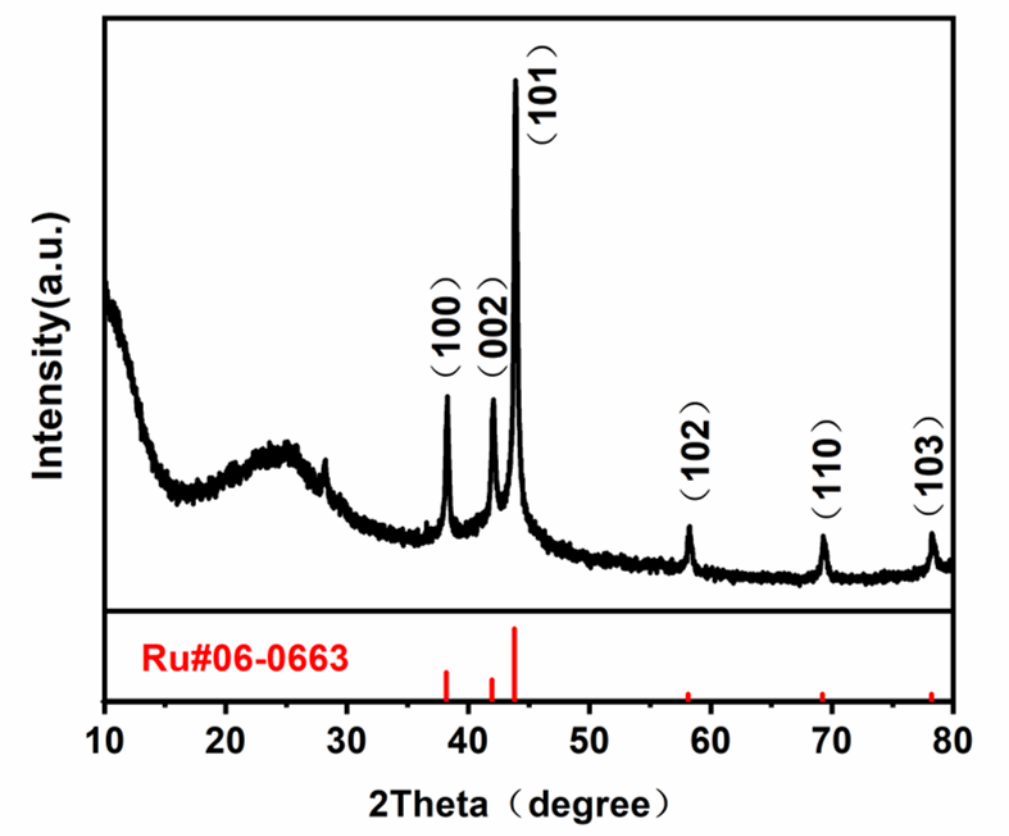

Figure S2. XRD of Ru-N-C-6%.

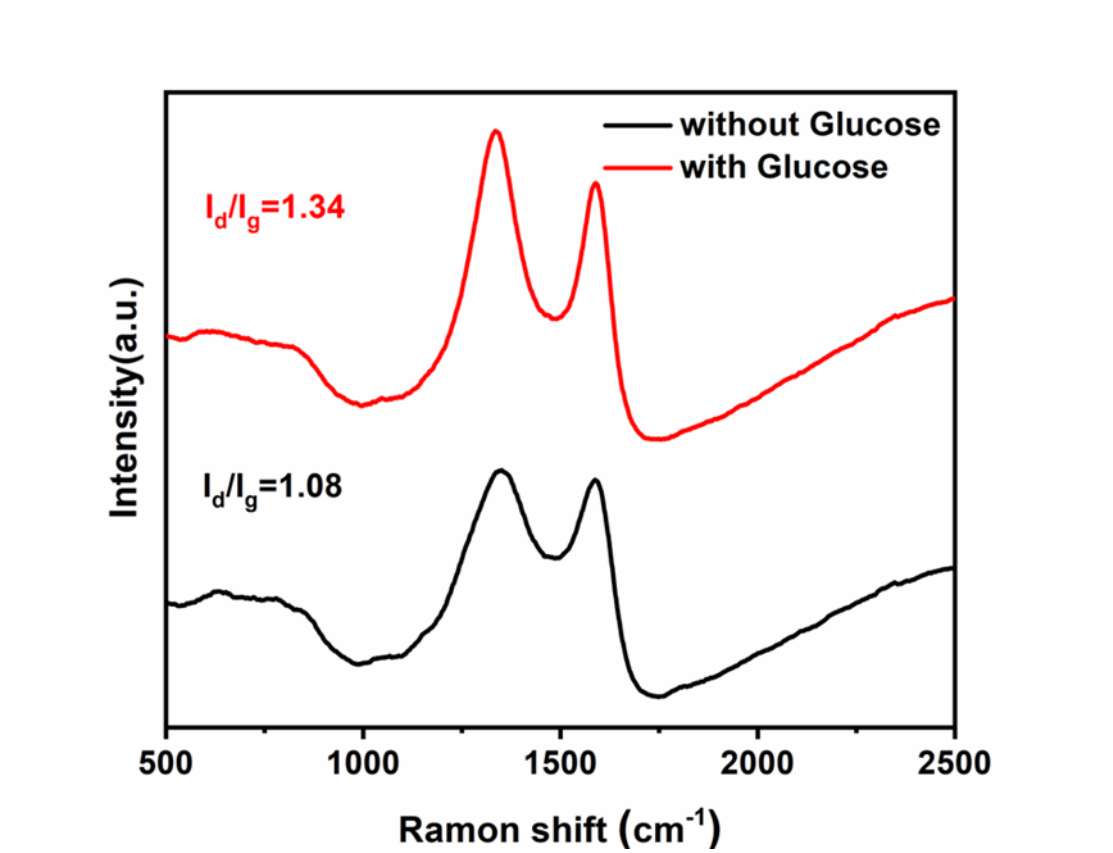

Figure S3. Ramon of Ru-N-C-6% with glucose or without glucose.

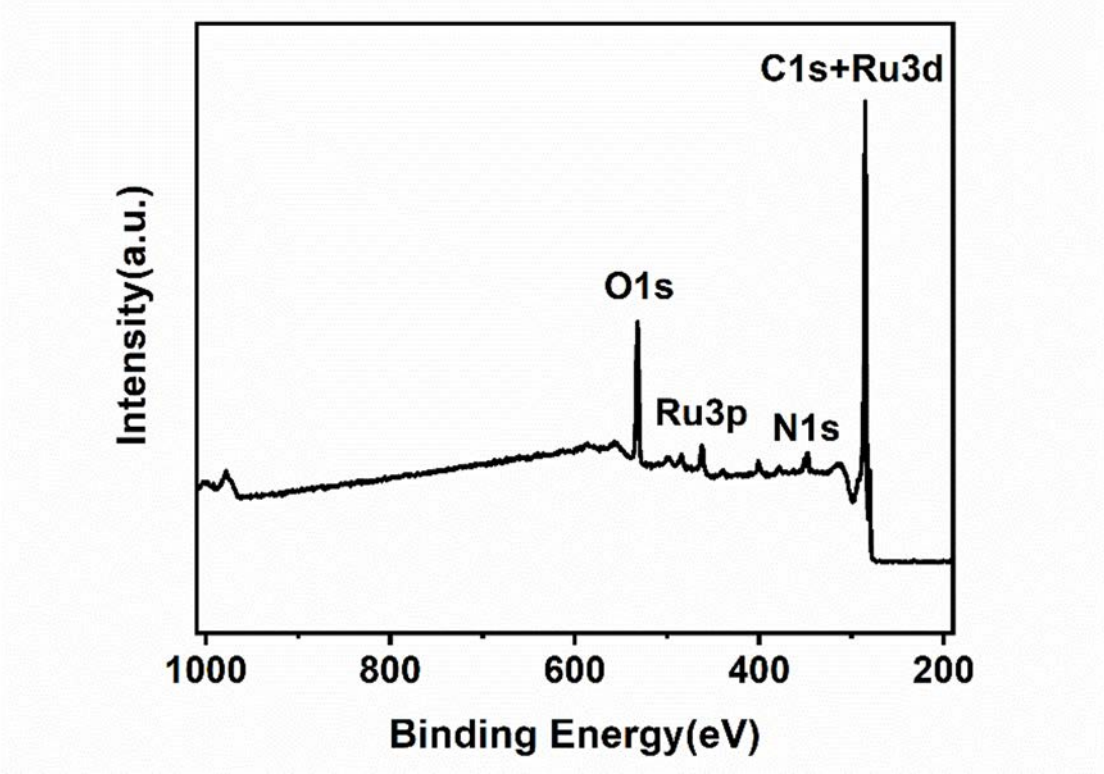

Figure S4. XPS of Ru-N-C-6%.

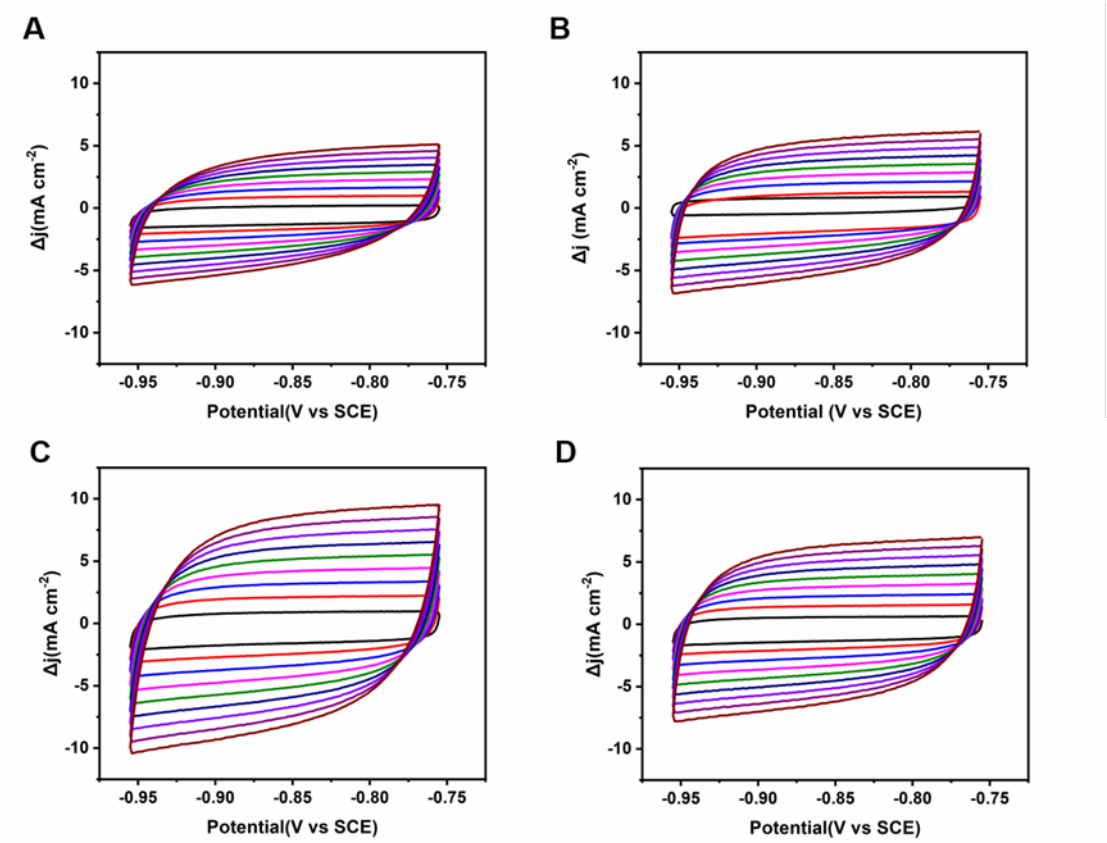

Figure S5. (A) SCV of Ru-N-C-2%. (B) SCV of Ru-N-C-4%. (C) SCV of Ru-N-C-6%. (D) SCV of Ru-N-C-8%.

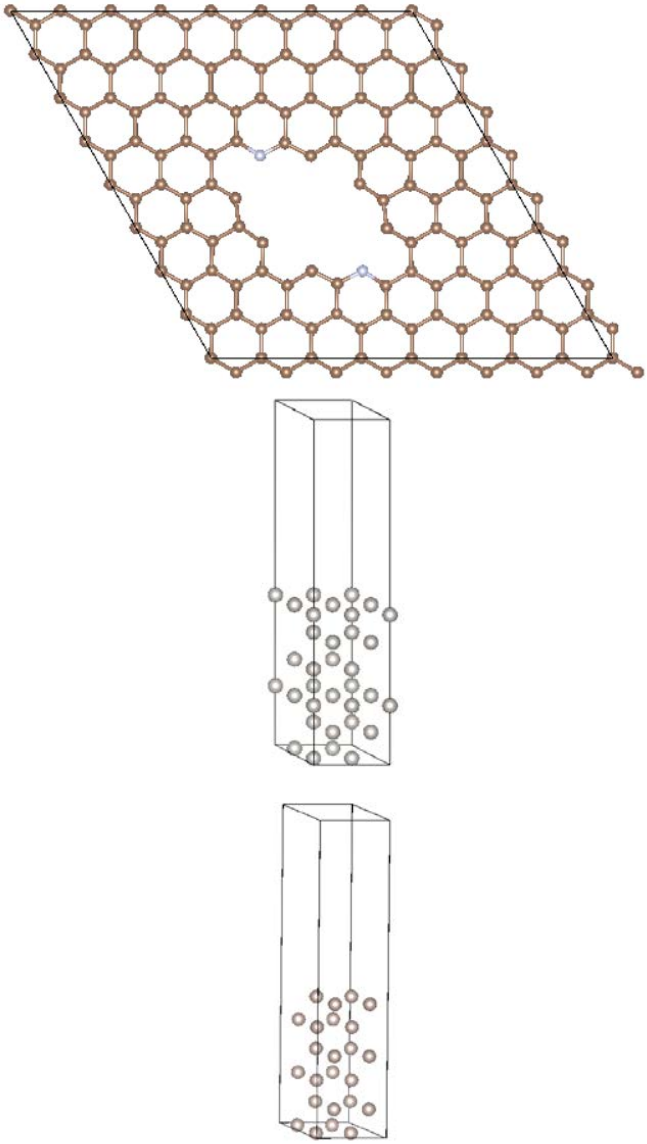

Figure S6. Other models used to calculate HER free energy, N-C(top), Pt(mid), and Ru(bottom)

Table S1 elements contents of Ru-N-C-6% from XPS

Elements	Contents
Ru 3p	4.26%
C 1s	86.96%
N 1s	2.86%
O 1s	5.92%

Table S2 Overpotentials of HER electrocatalysts at 10 mA cm^{-2} in 1 M KOH

samples	**Overpotential(mV)**	**Ref.**
Ru-N/C	34	This work
CDs/Pt-PANI	56	Appl. Catal. B-Environ. 2019, 257, 117905
A-CoPt-NC	50	Angew. Chem. Int. Ed. 2019, 58, 9404-9408
NiRu@NC	34	J. Mater. Chem. A 2018, 6, 1376-1381
Rh@CTF	57	J. Mater. Chem. A 2019, 7, 11934-11943
Ru-TiO_2	150	Angew. Chem. Int. Ed., 2020, 59 (4), 1718-1726
RuP_2@NPC	52	Angew. Chem. Int. Ed., 2020, 59 (4), 1718-1726
Porous Ru	83	Angew. Chem. Int. Ed., 2020, 59 (4), 1718-1726
Cu_{2-x}@Ru	80	Angew. Chem. Int. Ed., 2020, 59 (4), 1718-1726