

# Ag nanoparticles supported on nickel foam: a flexible 3D electrode for methanol electrocatalytic oxidation

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## Supplementary Material

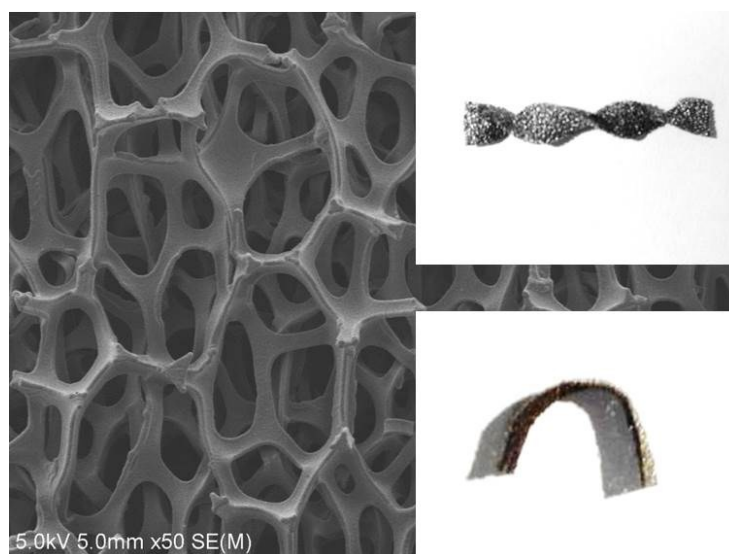


Fig. S1 Low-magnification SEM image of bare nickel foam. Inset: spiral and half arc of N-AgNPs/NF.

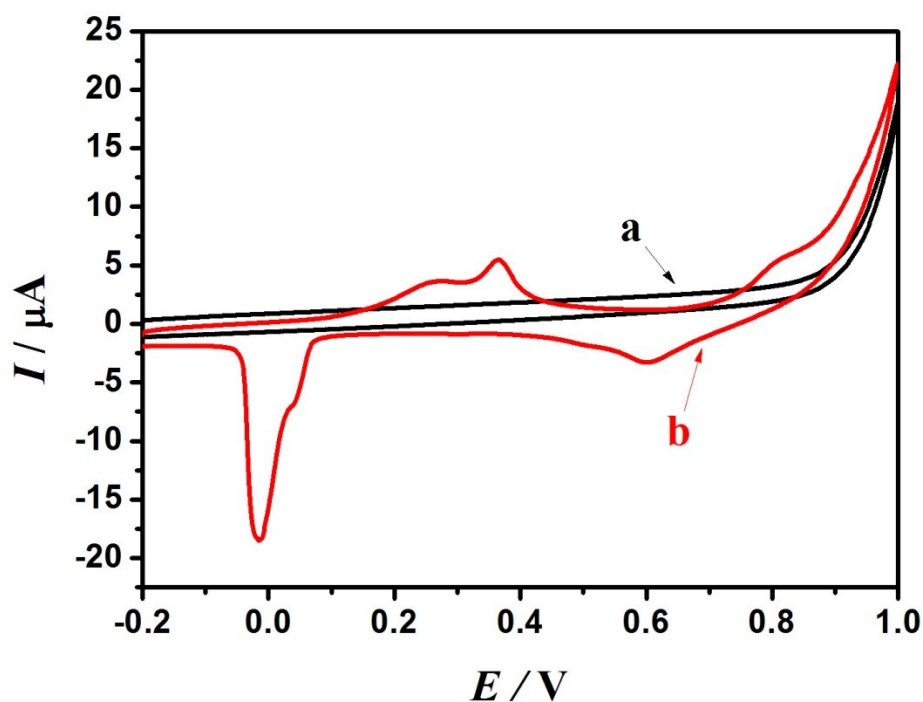


Fig. S2 CV of the N- ITO (a) and the N-AgNPs/ITO (b) in 0.1 M NaOH at a scan rate of 100 mV s<sup>-1</sup>.

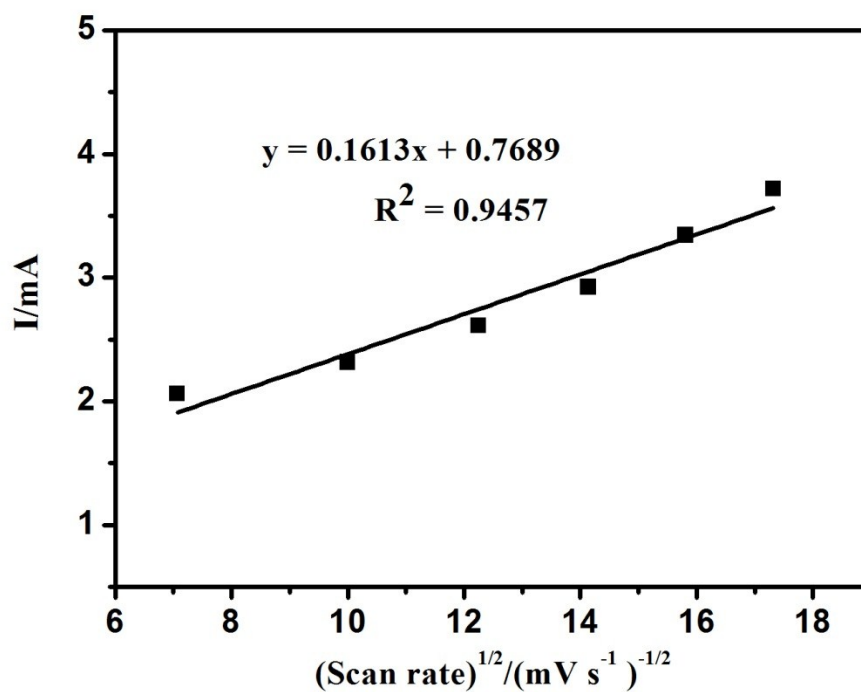


Fig. S3 The peak currents are proportional to square root of scan rates. (The AgNPs/NF in 5 mM [Fe(CN)<sub>6</sub>]<sup>3-/4-</sup> at various scan rates of 50 to 300mV s<sup>-1</sup>).

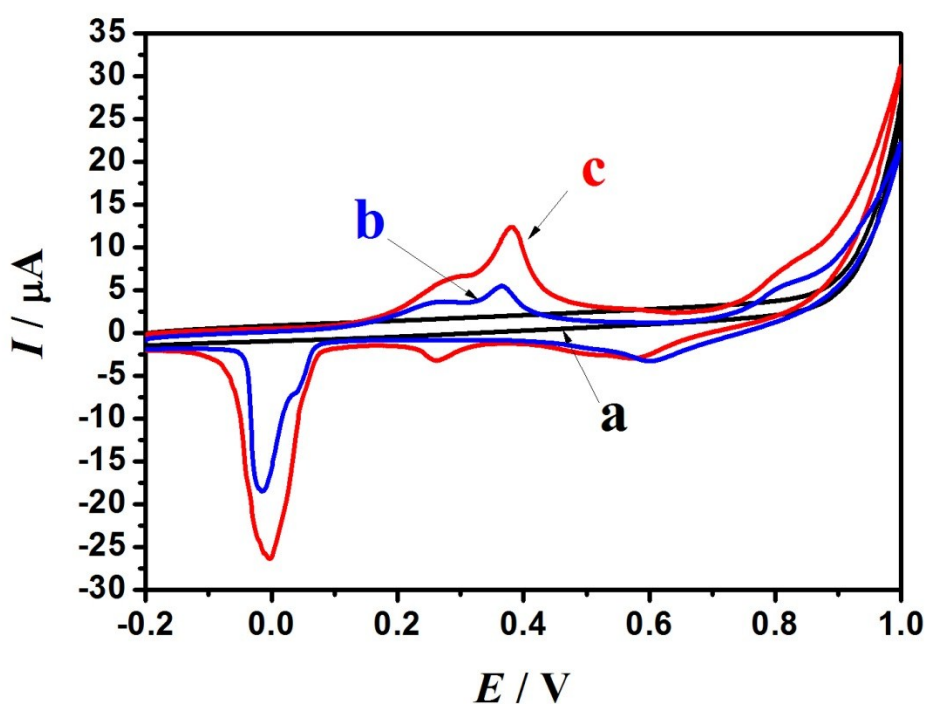


Fig. S4 CV of the N-ITO (a) and N-AgNPs/ITO (c) in the presence of 0.1 M methanol, the N-AgNPs/ITO (b) in the absence of 0.1 M methanol in 0.1 M NaOH. Scan rate: 100 mV s<sup>-1</sup>.

Table S1 Comparison of specific activity between the present AgNPs/NF and the other Ag and Ni modified electrodes reported in references.

Modified electrode	condition	Scan rate (mV s <sup>-1</sup> )	E <sub>a</sub> (V)	I <sub>a</sub>	Reference s
Ag/C	0.5 M KOH + 0.5 M CH <sub>3</sub> OH	20	0.75(vs. RHE)	16 mA mg <sup>-1</sup> <sub>Ag</sub>	[1]
PdAg/C	0.5 M KOH + 0.5 M CH <sub>3</sub> OH	20	0.43 (vs. RHE)	661 mA mg <sup>-1</sup> <sub>Pd</sub>	[1]
Ag@Pt/C-2	0.5 M H <sub>2</sub> SO <sub>4</sub> + 0.5M CH <sub>3</sub> OH	50	0.85 (vs. Ag/AgCl)	0.593 mA μg <sup>-1</sup> <sub>Pt</sub>	[2]
Ni/PAN/POAP/Pt	0.1MNaOH+ 0.5 M CH <sub>3</sub> OH	100	0.67(vs. SCE)	17.83 mA	[3]
Ni/3D-G	1.0MKOH+0.2 M CH <sub>3</sub> OH	50	0.67 (vs. Hg/HgO)	40.45 mA cm <sup>-1</sup>	[4]
AgNPs/NF	0.1MNaOH+ 0.1 M CH <sub>3</sub> OH	100	0.65(vs. Ag/AgCl)	172 mA cm <sup>-1</sup>	This work

## Reference

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2. J. Cao, M. Guo, J. Wu, J. Xu, W. Wang, Z. Chen, *Journal of Power Sources*, 2015, **277**, 155-160.
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4. H. Zhu, J. Wang, X. Liu, X. Zhu, *International Journal of Hydrogen Energy*, 2017, **42**, 11206-11214.