

**Sulfur poisoning of emergent and current electrocatalysts:
vulnerability of MoS₂, and direct correlation to Pt hydrogen
evolution reaction kinetics**

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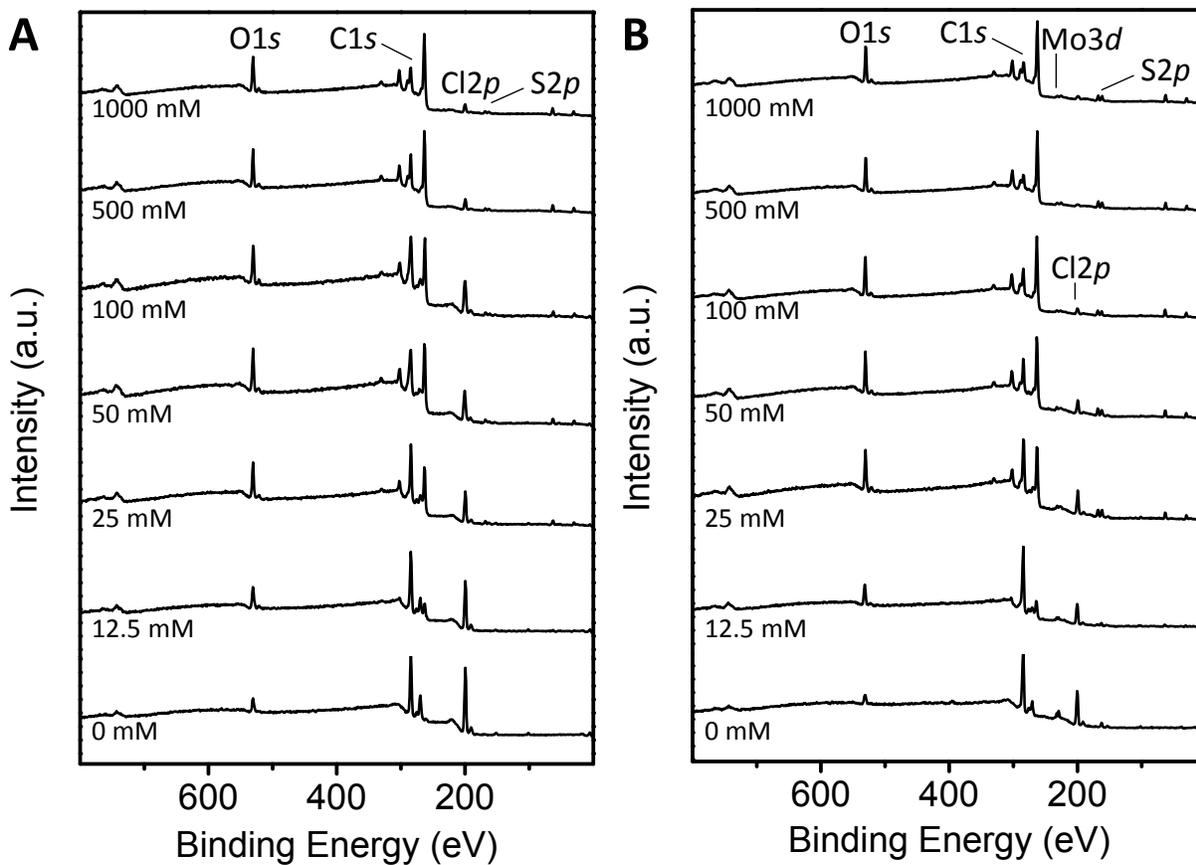


Figure S1. Survey scan XPS spectra of Pt/C (A) and MoS₂ (B) poisoned with increasing concentrations of NaHS, in which several prominent peaks were labelled. The concentrations of NaHS used are 0, 12.5, 25, 50, 100, 500 and 1000 mM, as indicated in the individual spectra.

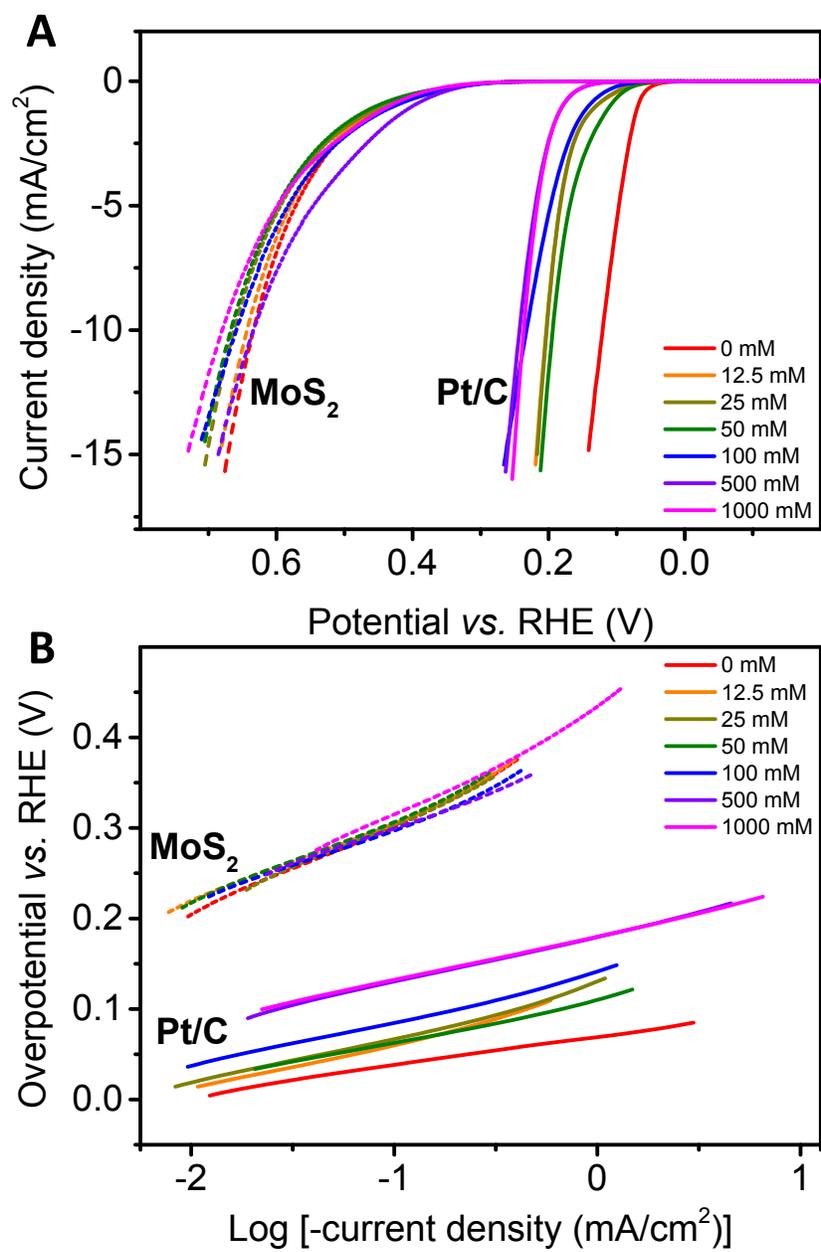


Figure S2. (A) HER LSV curves of Pt/C and MoS₂ poisoned with increasing concentrations of NaHS. (B) Corresponding Tafel plots of curves in (A).

Table S1. Surface atomic compositions of Pt/C and MoS₂ quantified from wide scan XPS spectra.

| [NaHS]/mM | atomic percentage (at.%) | | | | | | |
|-----------|--------------------------|-------------|-------------|------------------|--------------|-------------|-------------|
| | Pt/C | | | MoS ₂ | | | |
| | S2 <i>p</i> | C1 <i>s</i> | O1 <i>s</i> | S2 <i>p</i> | Mo3 <i>d</i> | C1 <i>s</i> | O1 <i>s</i> |
| 0 | 1.41 | 63.27 | 6.60 | 2.78 | 0.86 | 73.34 | 4.92 |
| 12.5 | 1.73 | 65.67 | 10.10 | 2.77 | 0.37 | 77.28 | 8.40 |
| 25 | 2.98 | 67.07 | 14.12 | 7.78 | 0.80 | 65.00 | 15.17 |
| 50 | 3.17 | 65.39 | 15.53 | 10.07 | 0.85 | 60.66 | 18.48 |
| 100 | 3.24 | 65.98 | 13.82 | 8.07 | 0.46 | 63.81 | 21.33 |
| 500 | 3.45 | 69.51 | 18.29 | 12.88 | 0.99 | 56.76 | 24.59 |
| 1000 | 4.01 | 66.31 | 21.51 | 9.51 | 0.72 | 61.59 | 22.65 |