# Supporting Information

## Mn-doped $WSe_2$ as an efficient electrocatalyst for hydrogen production and as anode material for lithium-ion batteries

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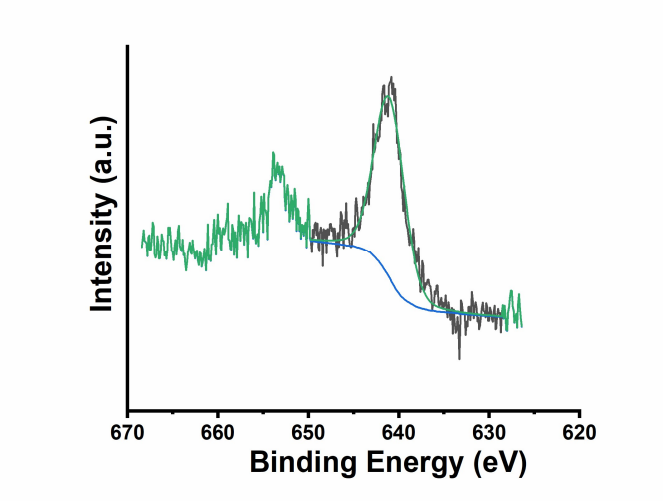


Figure S1. Deconvoluted X-ray photoelectron spectra of Mn 2p for Mn-$WSe_2$.

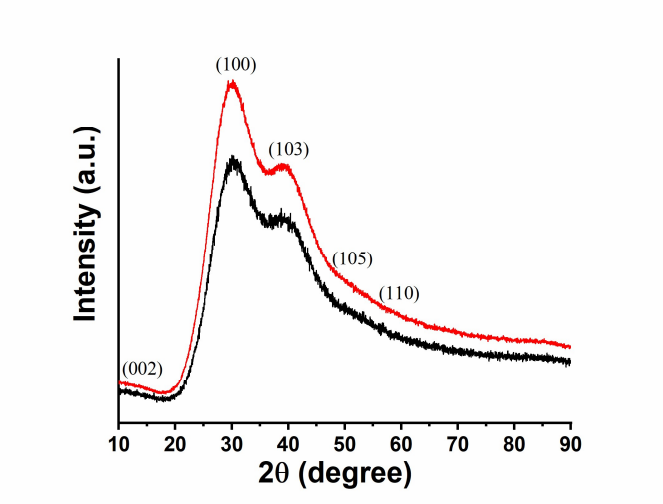


Figure S2. XRD pattern of $WSe_2$ and Mn-$WSe_2$.

Table S1. Electrocatalytic HER parameters in $H_2SO_4$ (0.5 M) for all tested materials.

| Material | Onset potential (V vs RHE) | Potential (V vs RHE) at -10 mA $cm^{-2}$ | Tafel slope [mV $dec^{-1}$] | Rct [Ω] |
|---|---|---|---|---|
| Mn-$WSe_2$ | -0.077 | -0.28 | 80 | 46 |
| Mn-$WSe_2$[a)] | -0.077 | -0.32 | 99 | - |
| $WSe_2$ | -0.27 | -0.43 | 153 | 299 |
| $WSe_2$[a)] | -0.31 | -0.51 | 146 | - |
| Pt/C | -0.017 | -0.060 | 45 | 42 |

a) after 10 000 cycles

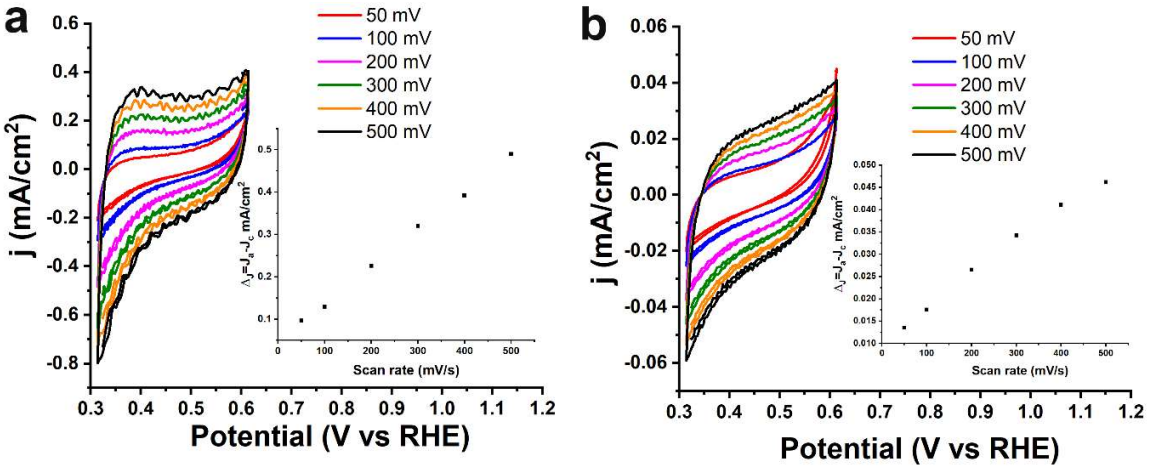


Figure S3. Cyclic voltamographs of (a) Mn-$WSe_2$ and (b) $WSe_2$ in a nitrogen saturated aqueous 0.5 M $H_2SO_4$ electrolyte, at a rotation speed of 1,600 rpm and scan rates from 50 to 500 mV/s. Inset: Scan rate dependence of the current densities for the corresponding materials.