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Title:	Ultrathin Twisty PdNi Alloy Nanowires as Highly Active ORR Electrocatalysts Exhibiting Morphology-Induced Durability over 200 K Cycles
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Abstract:	Even though the anion exchange membrane fuel cells have many advantages, the stability of their electrocatalysts for oxygen reduction reaction (ORR) has remained remarkably poor. We report here on the ultrathin twisty PdNi-alloy nanowires (NWs) exhibiting a very low reaction overpotential with an E1/2 ~ 0.95 V versus RHE in alkaline media maintained over 200 K cycles, the highest ever recorded for an electrocatalyst. The mass activity of the used NWs is >10 times higher than fresh commercial Pt/C. Therein, Ni improves the Pd d-band center for a more efficient ORR, and its leaching continuously regenerates the surface active sites. The twisty nanowire morphology imparts multiple anchor points on the electrode surface to arrest their detachment or coalescence and extra stability from self-entanglement. The significance of the NW morphology was further confirmed from the high-temperature durability studies. The study demonstrates that tailoring the number of contact points to the electrode-surface may help realize commercial-grade stability in the highly active electrocatalysts.
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