Electronic Supplementary Information

Solution synthesis of triangular and hexagonal nickel nanosheets with the aid of tungsten hexacarbonyl

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Fig. S1 Size distribution histogram of the 15 nm Ni nanosheets.

Average size: 15±4 nm
Number: 313
**Fig. S2** TEM image showing a standing nanosheet (red circled region) which reveals the thickness dimension.

**Fig. S3** EDS spectrum of the prepared 15 nm Ni nanosheets.
**Fig. S4** Size distribution histogram of the 70 nm Ni nanosheets.

**Fig. S5** XRD pattern of the prepared 70 nm Ni nanosheets.
Fig. S6 TEM image of the product obtained after reacting at 150 °C for 1 hour.
Fig. S7  (a) and (c) are the TEM images of the products synthesized with different amounts of W(CO)$_6$ (a: 1 mmol; c: 2 mmol). (b) and (d) are the corresponding EDS spectra obtained from the SEM-EDS analyses on the bulk sample powders (b: 1 mmol; d: 2 mmol W(CO)$_6$). The determined relative contents of W are only 0.079% (b) and 1.6% (d) of that of Ni.
Fig. S8 Color change of the mixed solution of OAm and W(CO)_6 (a) and the mixed solution of OAm, W(CO)_6, and Ni(acac)_2 (b) at different temperatures.

Fig. S9 TEM image of the Ni nanosheets obtained after injecting 1 mL of oleic acid into the reaction system at 160 °C.
**Fig. S10** Size distribution histogram of the product at 160 °C with an aging time of 1 h.

**Fig. S11** Size distribution histogram of the product at 170 °C with an aging time of 1 h.
Fig. S12 Size distribution histogram of the product at 200 °C with an aging time of 1 h.