## Supporting information

## Improved catalytic performance of encapsulated Ru nanowires for aqueousphase Fischer-Tropsch synthesis

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Figure S1. The topical GC spectrum of aqueous phase.



Figure S2. TEM image of Ru-PVP.



Figure S3. XPS spectra of Ru-PVP and Ru-PVP@SiO<sub>2</sub> YSNs



Figure S4. Water drops on (a) Ru-PVP@SiO<sub>2</sub> YSNs and (b) Ru-PVP@SiO<sub>2</sub>-phenyl YSNs.



Figure S5. N<sub>2</sub> sorption isotherms of (a) Ru-PVP@SiO<sub>2</sub>-phenyl YSNs and (b) Ru-PVP@SiO<sub>2</sub> CSNs.



Figure S6. (a) TEM images of Ru-PVP@SiO<sub>2</sub>-phenyl YSNs and photos of Ru-PVP@SiO<sub>2</sub>-phenyl YSNs in water (b) before and (c) after stirring.



Figure S7. IR spectrum of Ru-PVP@SiO<sub>2</sub>-phenyl YSNs