

## **Supplementary Information**

### **Hydrogen production from methane at 200 to 500 °C — Clean hydrogen production in conjunction with carbon fixation at 200 to 250 °C —**

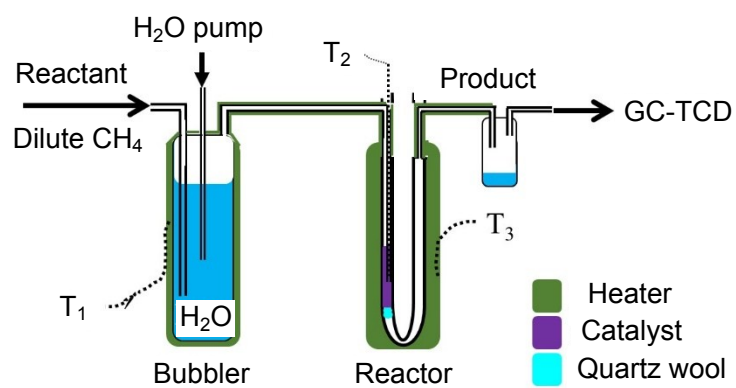
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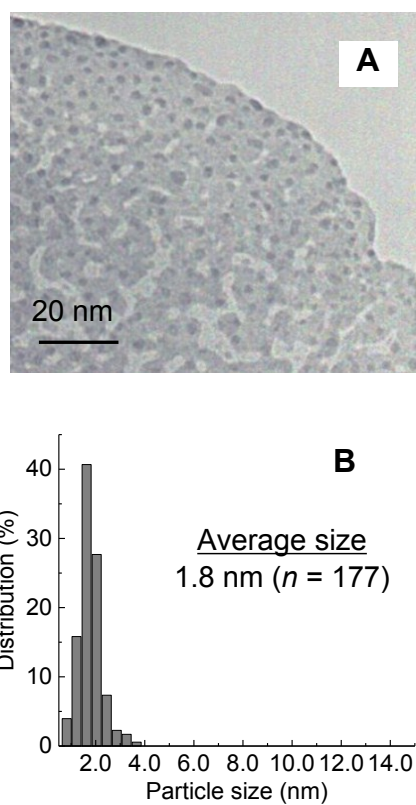
**This file includes:**

∞ Supplementary Figure S1 to S3

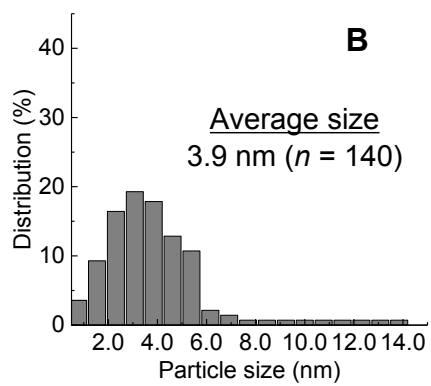
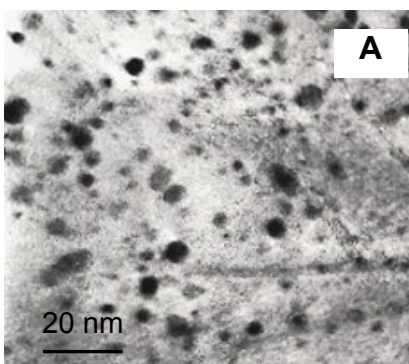
## Supplementary Figure



**Fig. S1** Schematic image of catalytic reaction system.



**Fig. S2** (A) A TEM image of BS-Ru/C catalyst and (B) the size distribution of the deposited Ru particles ( $n$ : particle count number).



**Fig. S3** (A) A TEM image of Ref.-Ru/C catalyst and (B) the size distribution of the deposited Ru particles ( $n$ : particle count number).