Electronic Supplementary Material (ESI) for RSC Advances.

Supporting information

One-step green synthesis of a ruthenium/graphene composite as a highly efficient catalyst

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The loading of Ru nanoparticles on WRG can be adjusted by simply changing the weight ratio of $RuCl_3$ to GO. For example, when the initial weight ratio of $RuCl_3$ to GO was decreased to 1:1, the content of Ru was correspondingly reduced to 19.5 wt% at a similar particle size (Fig. S1a). At a significantly enhanced weight ratio (5:1) of $RuCl_3$ to GO, however, nanoparticles tended to aggregate into clusters with sizes of up to tens of nanometers (Fig. S1b).

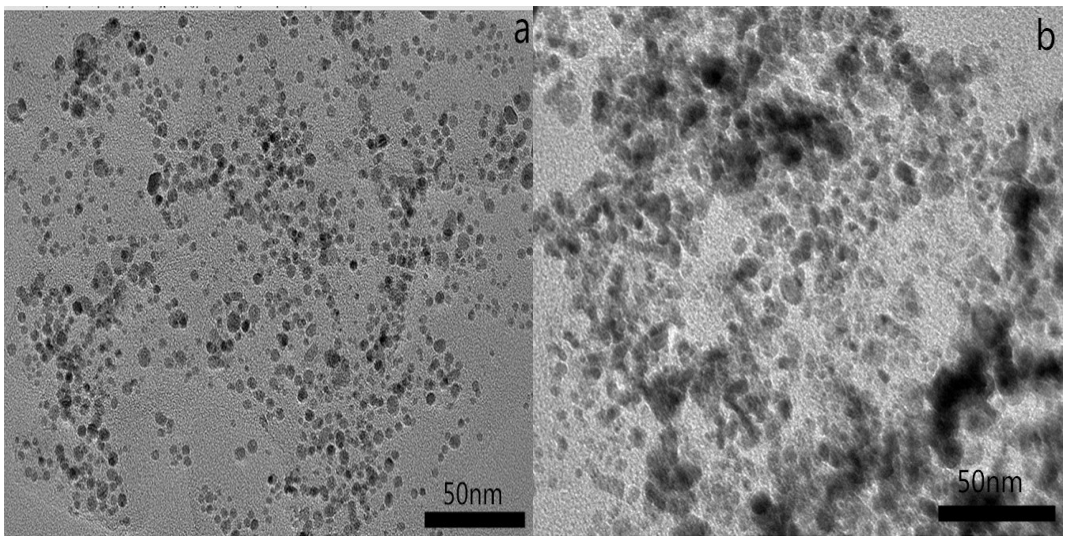

Fig. S1. (a) TEM image of Ru/WRG at an initial weight ratio of $RuCl_3$ to GO of 1:1, (b) TEM image of Ru/WRG at an initial weight ratio of $RuCl_3$ to GO of 5:1.

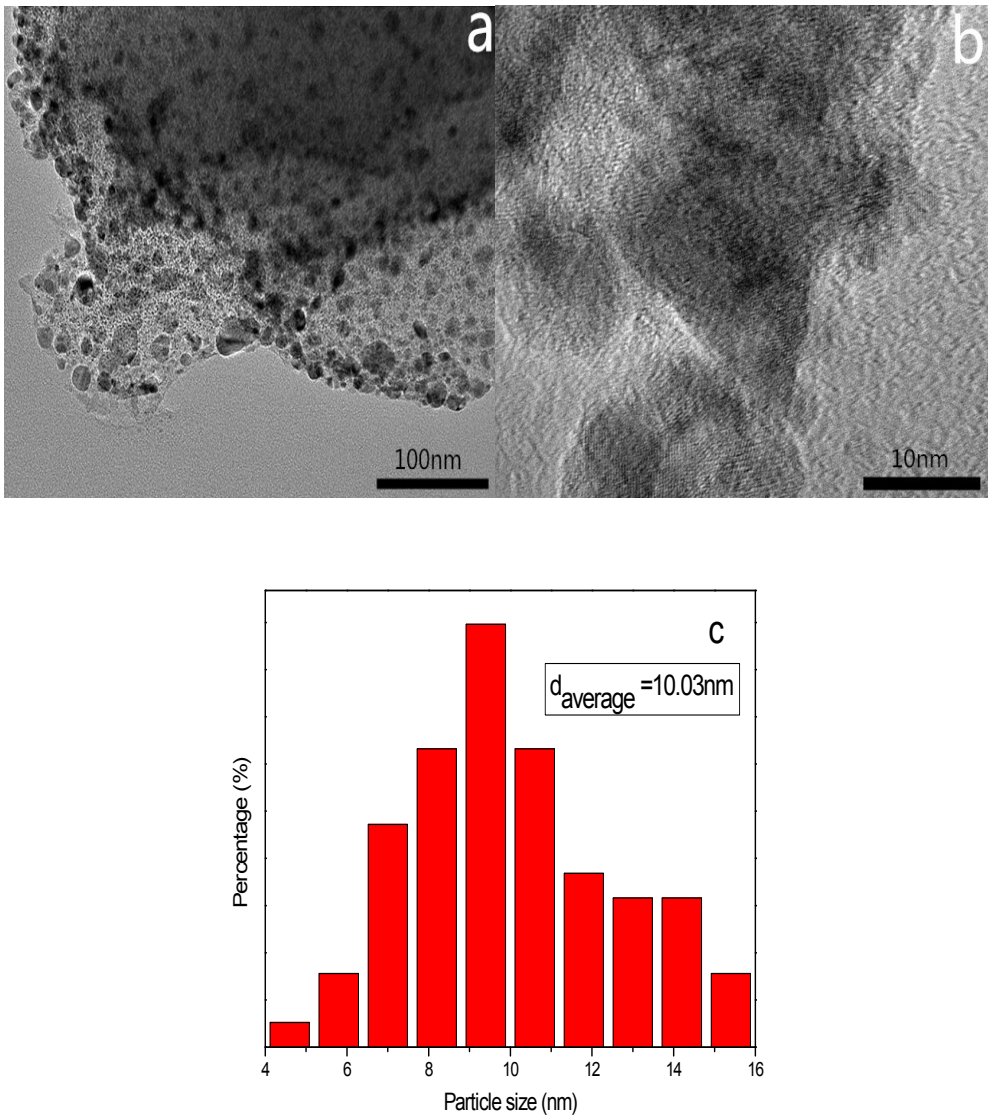

Fig. S2. (a) (b) TEM images and (c) particle size distribution of Ru/AC at an initial weight ratio of $RuCl_3$ to activated carbon of 2:1 (the metal loading is 37.4 wt%).