

Supporting Information

Temperature-Dependent Formation of Ru-based Nanocomposites: Structures and Properties

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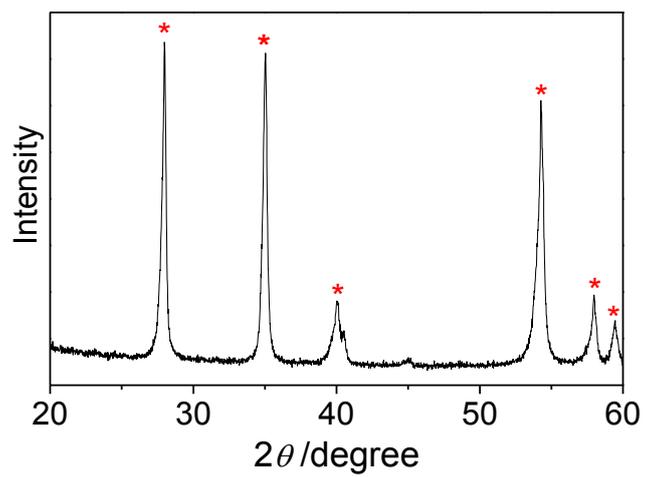


Fig. S1 XRD pattern of the sintering product of free RuCl_3 at 773 K for 4 h in ambient atmosphere. The peaks of RuO_2 are marked by red asterisks.

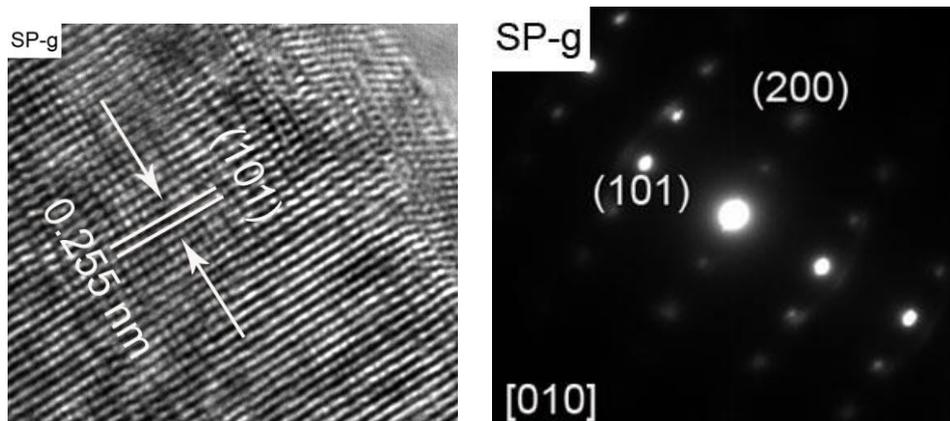


Fig. S2 HR-TEM image and SAED pattern of SP-g.

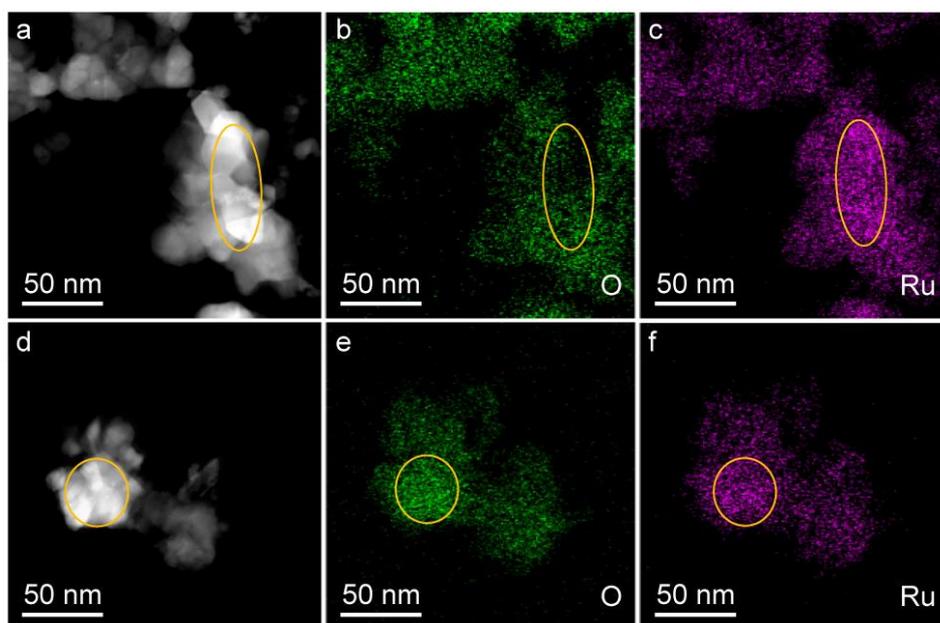


Fig. S3 STEM images of the SP-c (a, d) and their EDS elemental mappings of O (b, e) and Ru (c, f). The orange ellipsoids and the orange circles were placed at the center of nanoparticles.

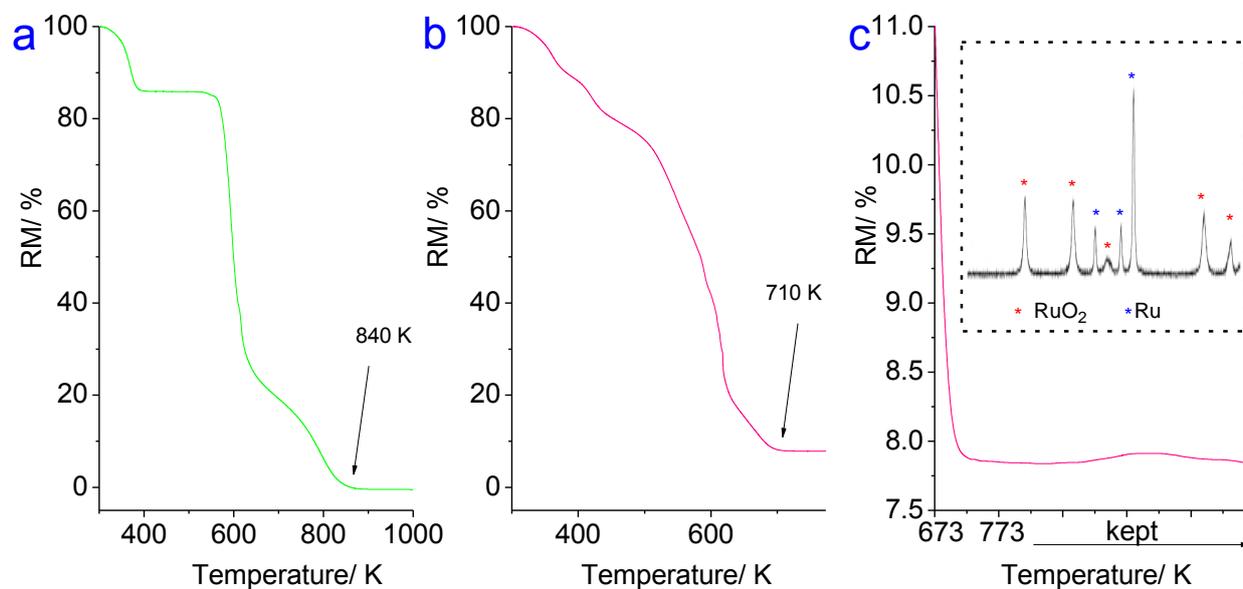


Fig. S4 TGA curves of pure β -CD (a) and its intimate mixture with RuCl_3 in air (b: from 300 to 773 K; c: from 673 to 773 K and kept at 773 K during the collection). The inset of c is the XRD pattern of the collected sample at 773 K for 4 h. The blue and red asterisks denote the characteristic peaks of Ru and RuO_2 , respectively.

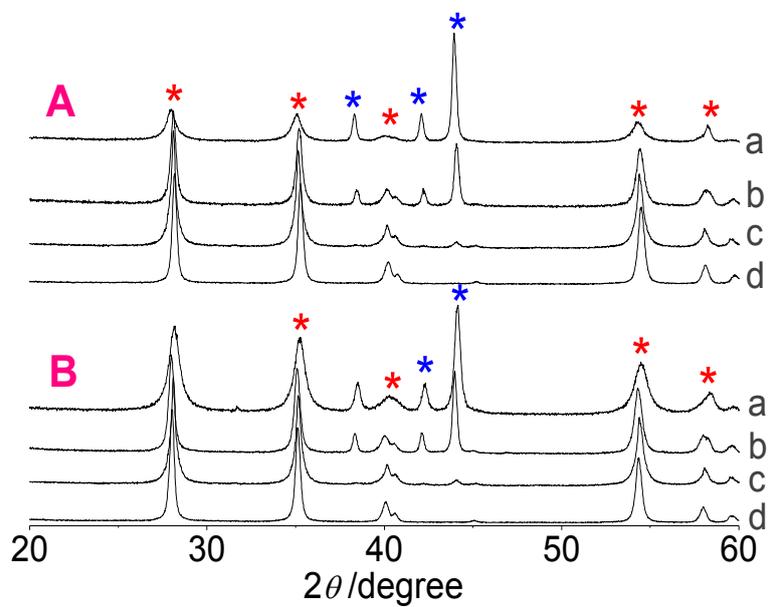


Fig. S5 XRD patterns of the mixtures of RuCl₃ with α -CD (A) and γ -CD (B) at (a) 573, (b) 773, (c) 873 and (d) 1173 K for 4 h in ambient atmosphere. The peaks of RuO₂ and Ru are marked by red and blue asterisks respectively.

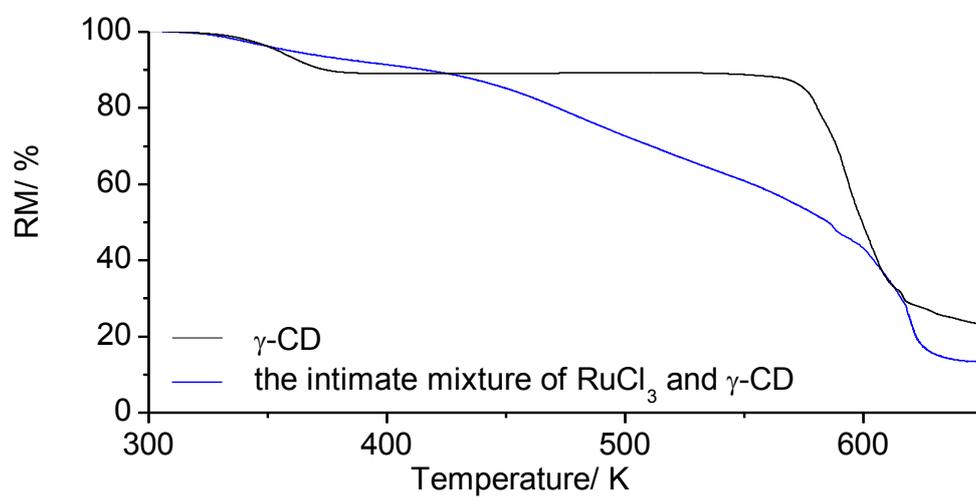
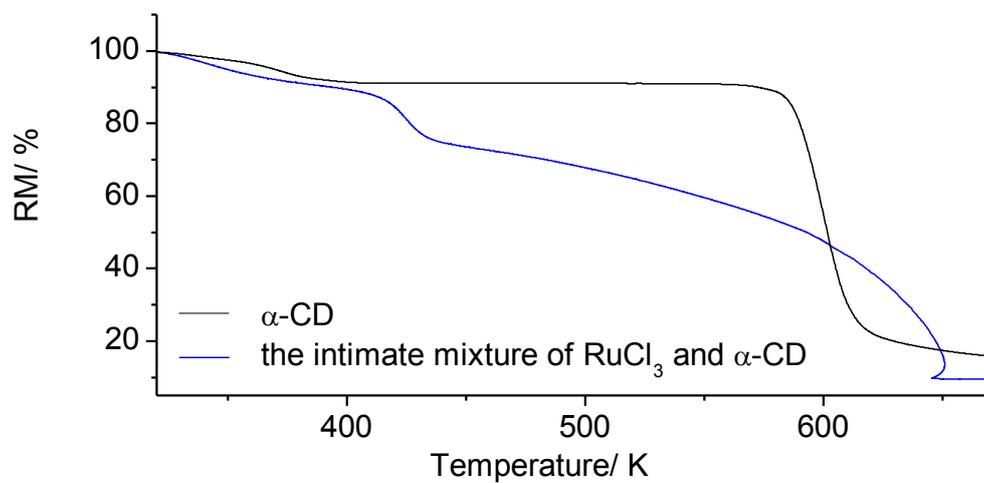


Fig. S6 TG curves of α -, γ -CD, and their intimate mixtures with RuCl_3 .

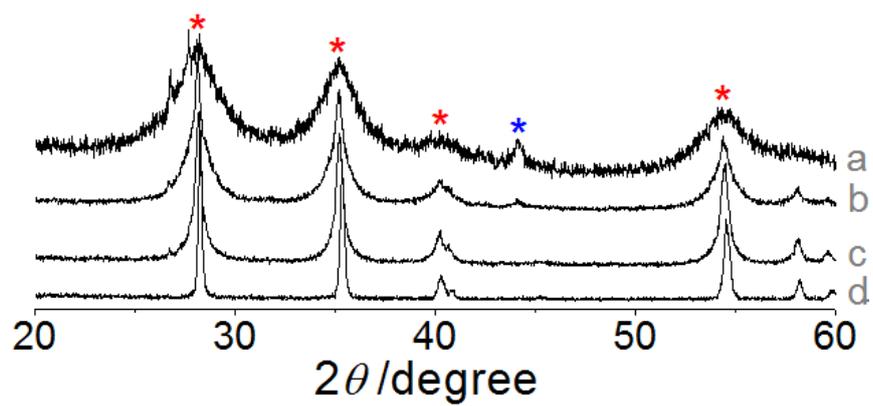


Fig. S7 XRD patterns of the mixtures of RuCl_3 with activated carbon at (a) 573, (b) 773, (c) 873 and (d) 1173 K for 4 h in ambient atmosphere. The peaks of RuO_2 and Ru are marked by red and blue asterisks respectively.

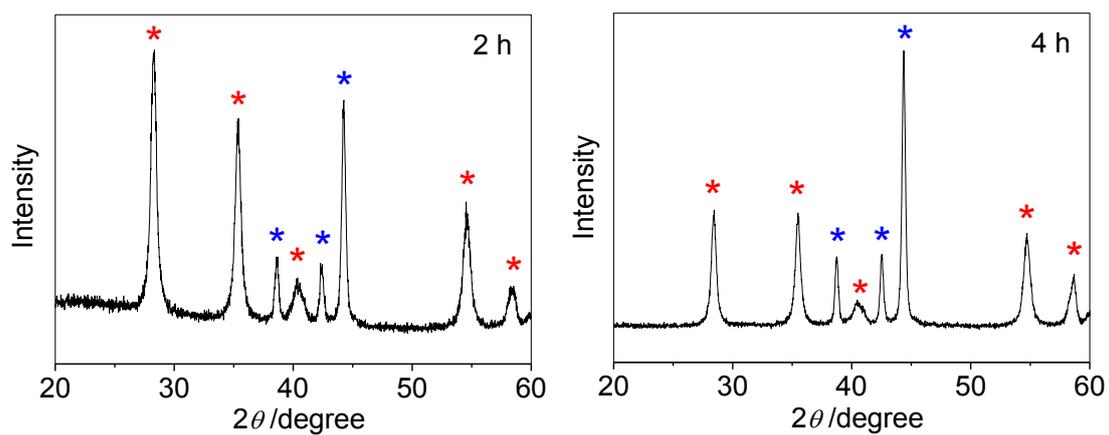


Fig. S8 XRD patterns of the sintering product of the mixture (1:1, molar ratio) of RuCl₃ and β -CD at 773 K for 2 and 4 h in ambient atmosphere. The peaks of RuO₂ and Ru are marked by red and blue asterisks respectively.

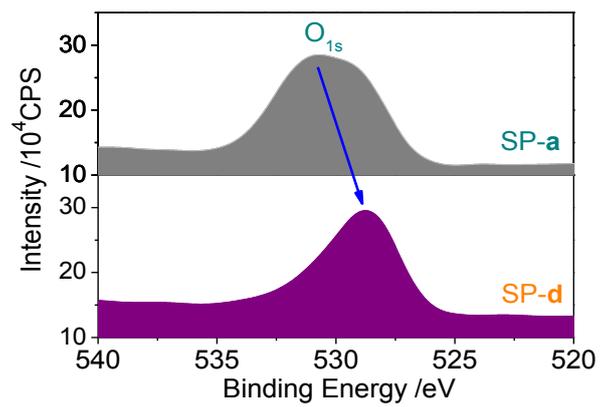


Fig. S9 XPS-(O 1s) spectra of SP-a and SP-d.