

Electronic Supplementary Information

Simple Chemical Synthesis of Intermetallic Pt₂Y Bulk Nanopowder

Yasukazu Kobayashi,^{*a} Shohei Tada^b, and Ryuji Kikuchi^c

^a *Interdisciplinary Research Center for Catalytic Chemistry, National Institute of Advanced Industrial Science and Technology (AIST), 1-1-1 Higashi, Tsukuba, Ibaraki 305-8565, Japan, E-mail: yasukobayashi@aist.go.jp.*

^b *Department of Materials Science and Engineering, Ibaraki University, 4-12-1 Nakanarusawacho, Hitachi, Ibaraki 316-8511, Japan.*

^c *Department of Chemical System Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan.*

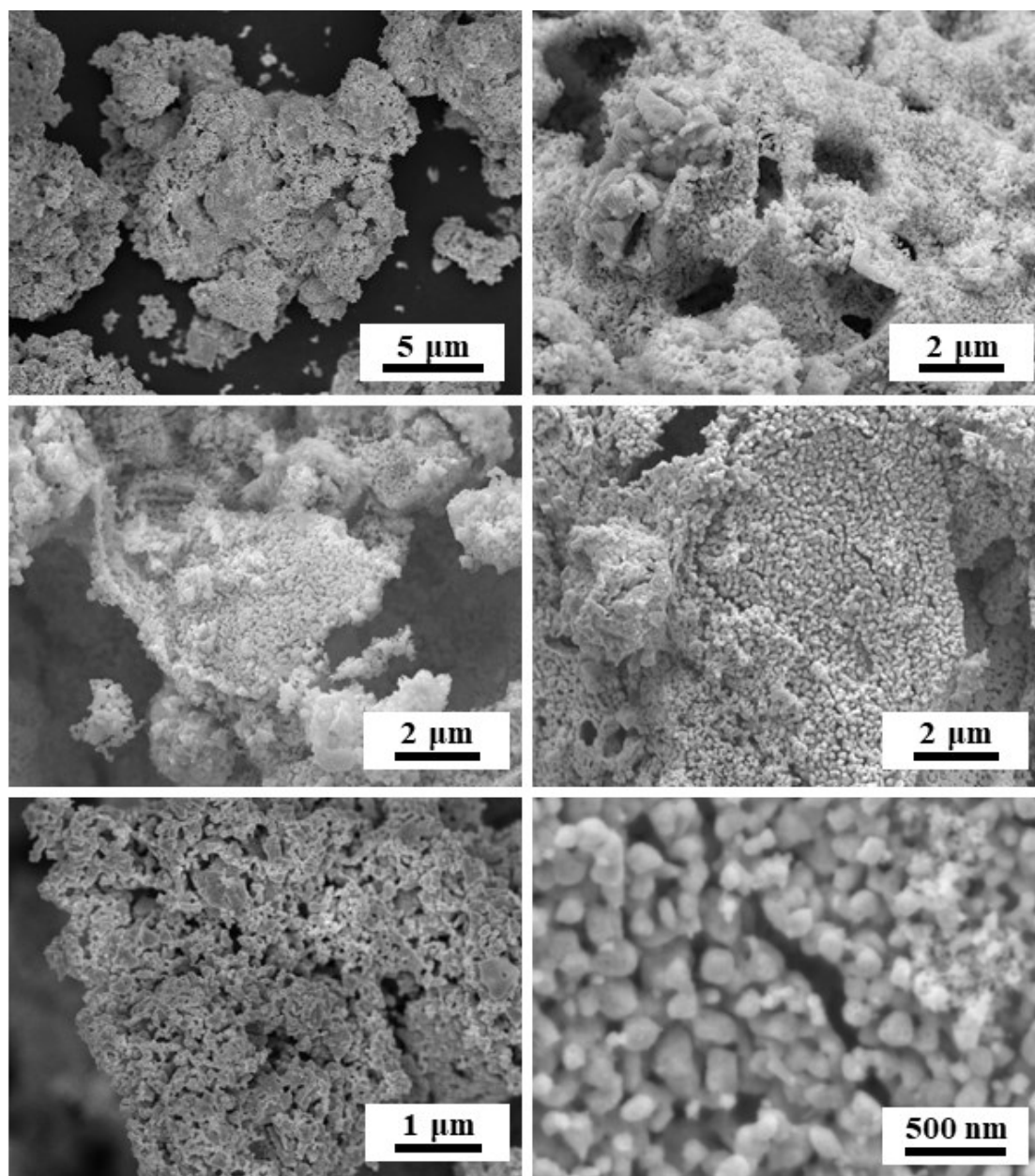


Fig. S1 SEM images of the reduced Pt_2Y bulk nanopowder.

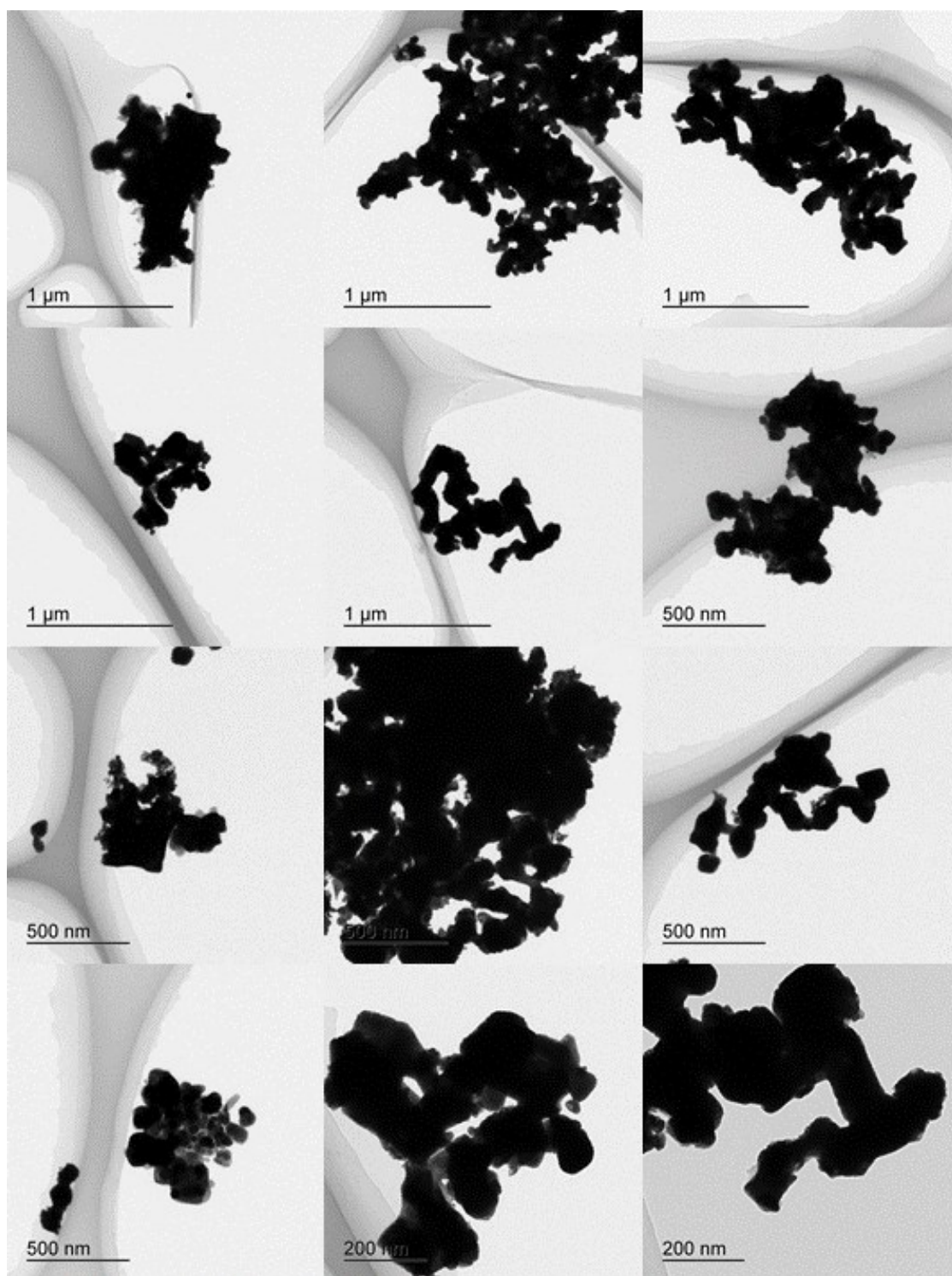


Figure S2 □ TEM images of the reduced Pt₂Y bulk nanopowder.

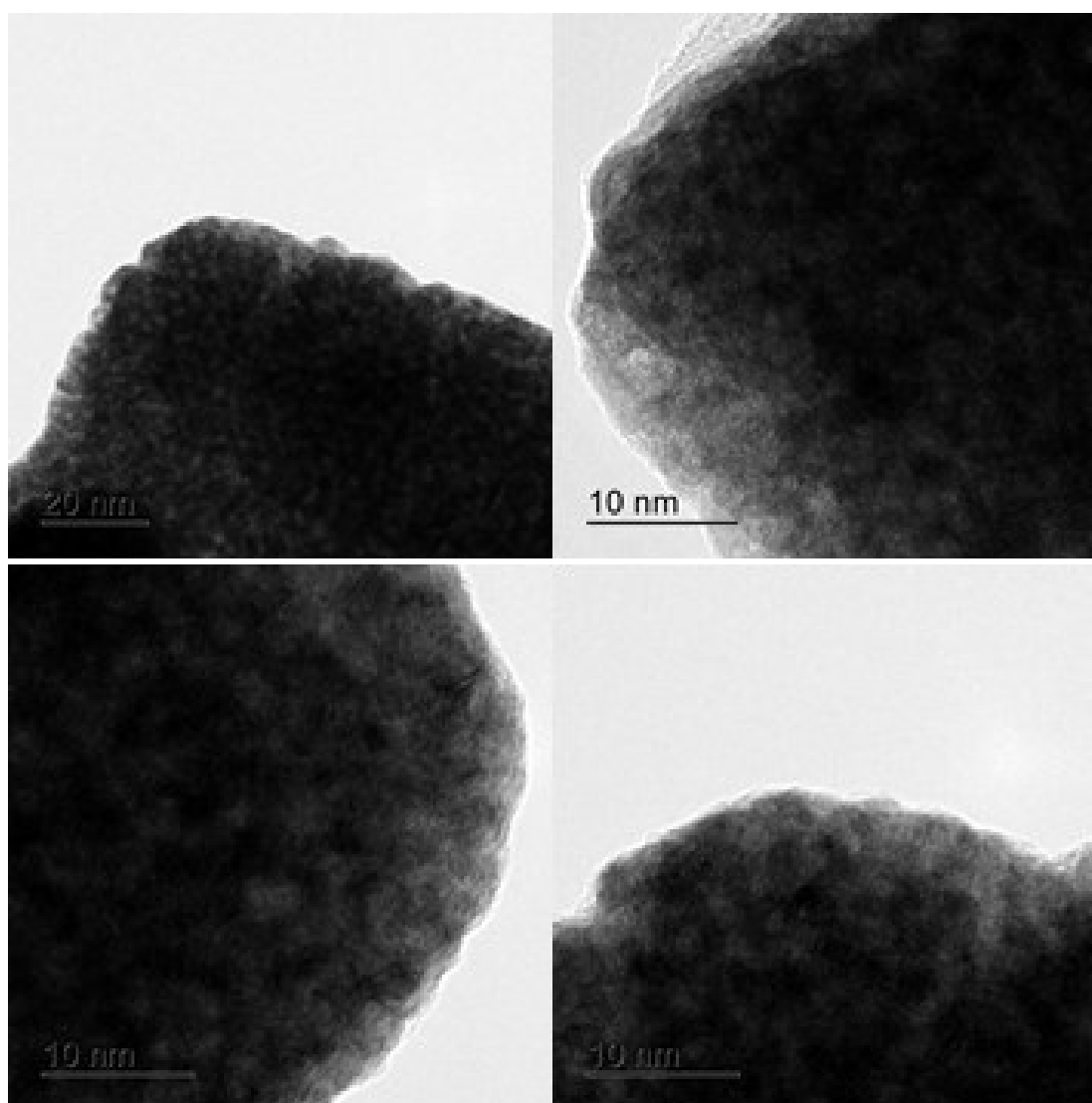


Figure S3 □ Zoomed TEM images of the reduced Pt_2Y bulk nanopowder.

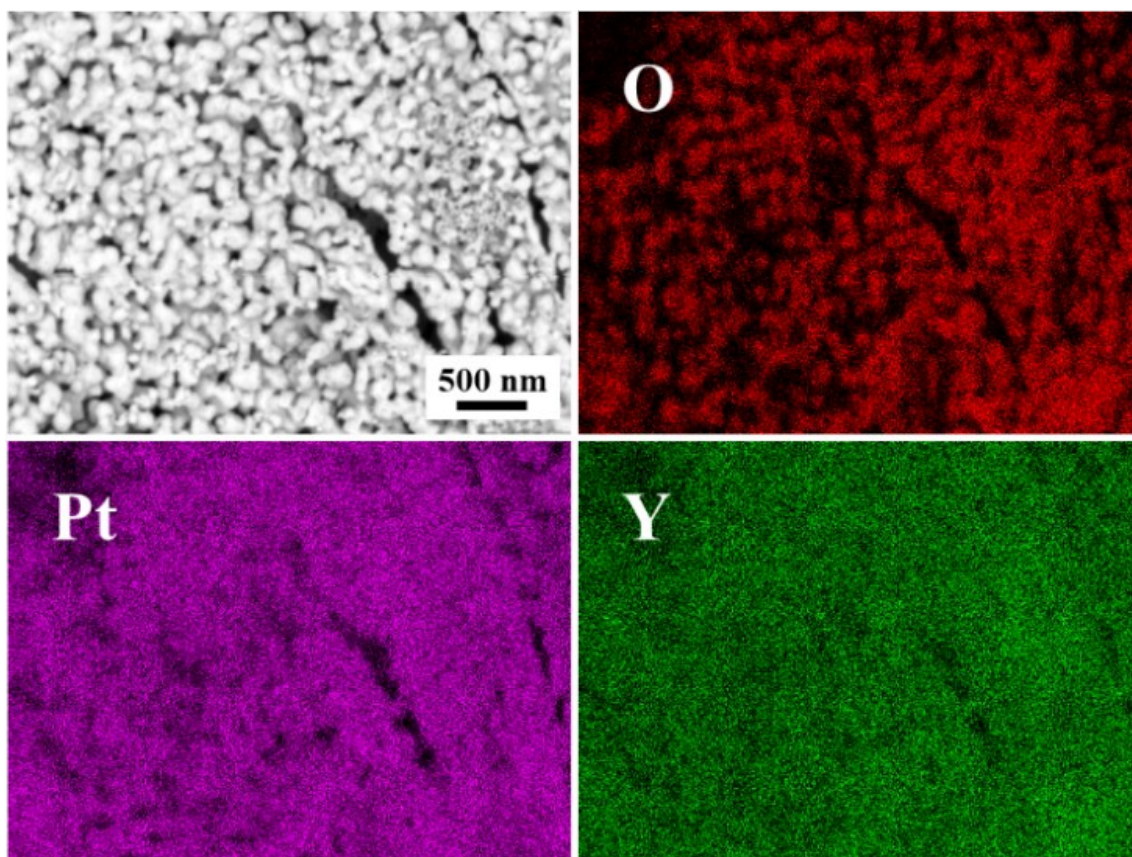


Fig. S4 □ Elemental mapping of Pt, Y and O on reduced Pt_2Y bulk nanopowder by SEM-EDS analysis.

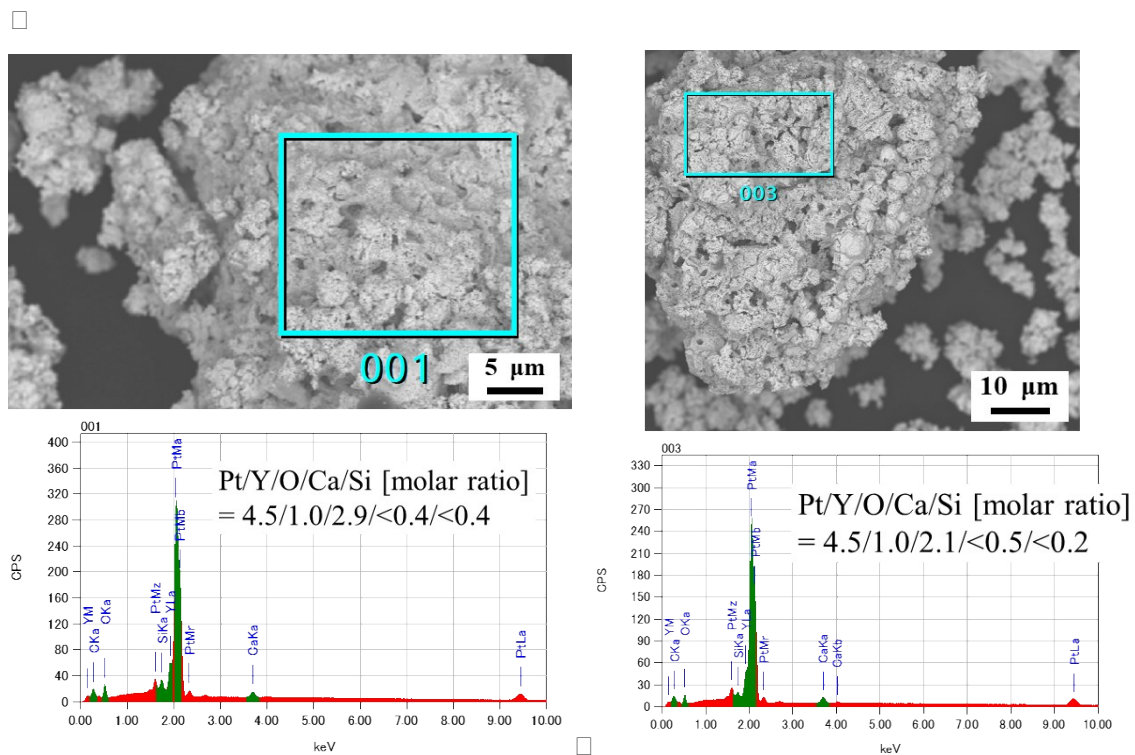


Fig. S5 □ Elemental analysis of 2 different positions on the Pt₂Y bulk nanopowder by SEM-EDS analysis.

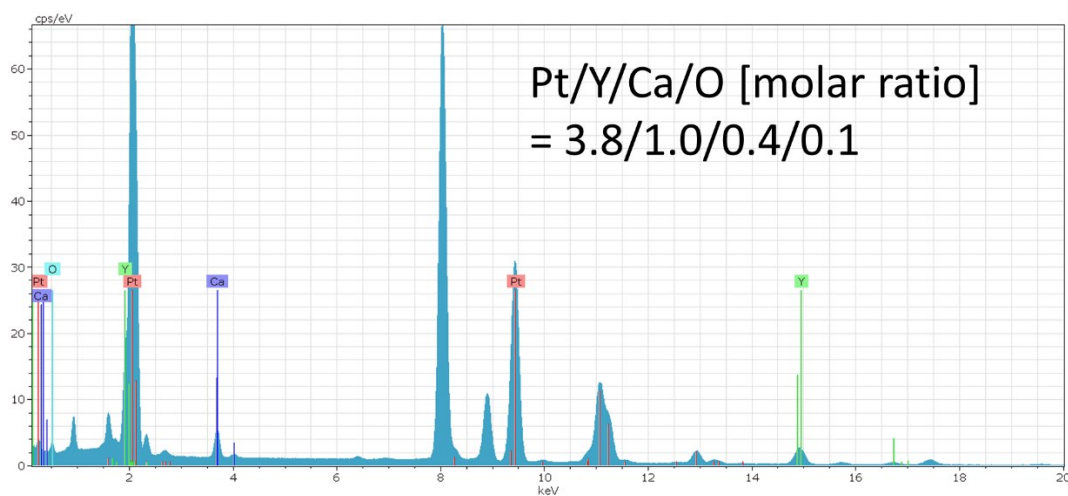


Figure S6 □ Elemental analysis result in the reduced Pt₂Y bulk nanopowder by TEM-EDS. The measured location is inside of a yellow square in Fig. 3. Copper-based micro grids (NP-C15 (Lacy Carbon film), Okenshoji Co., Ltd.) were used to fix the sample powder and therefore non-identified signals in the figure are mainly due to the copper.

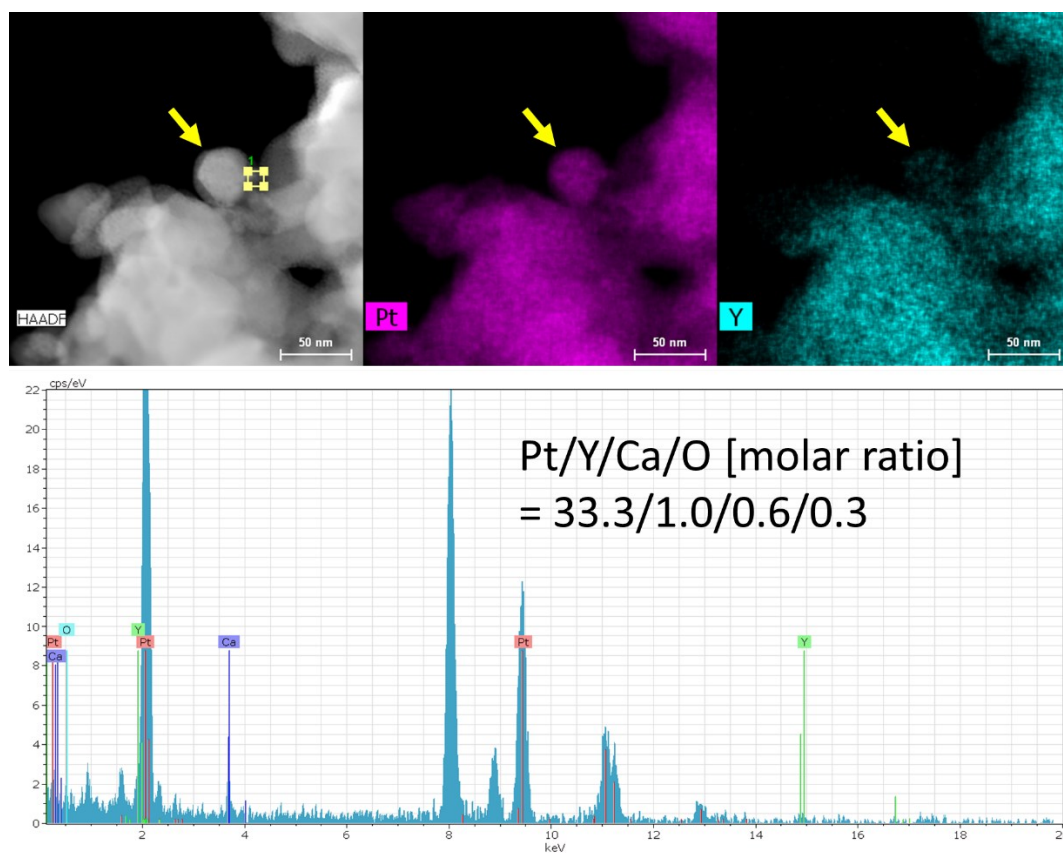


Figure S7 □ Elemental analysis result in the reduced Pt_2Y bulk nanopowder by TEM-EDS. The measured location is inside of a yellow square. Copper-based micro grids (NP-C15 (Lacy Carbon film), Okenshoji Co., Ltd.) were used to fix the sample powder and non-identified signals in the figure are mainly due to the copper. An arrow indicates the position of a platinum particle.

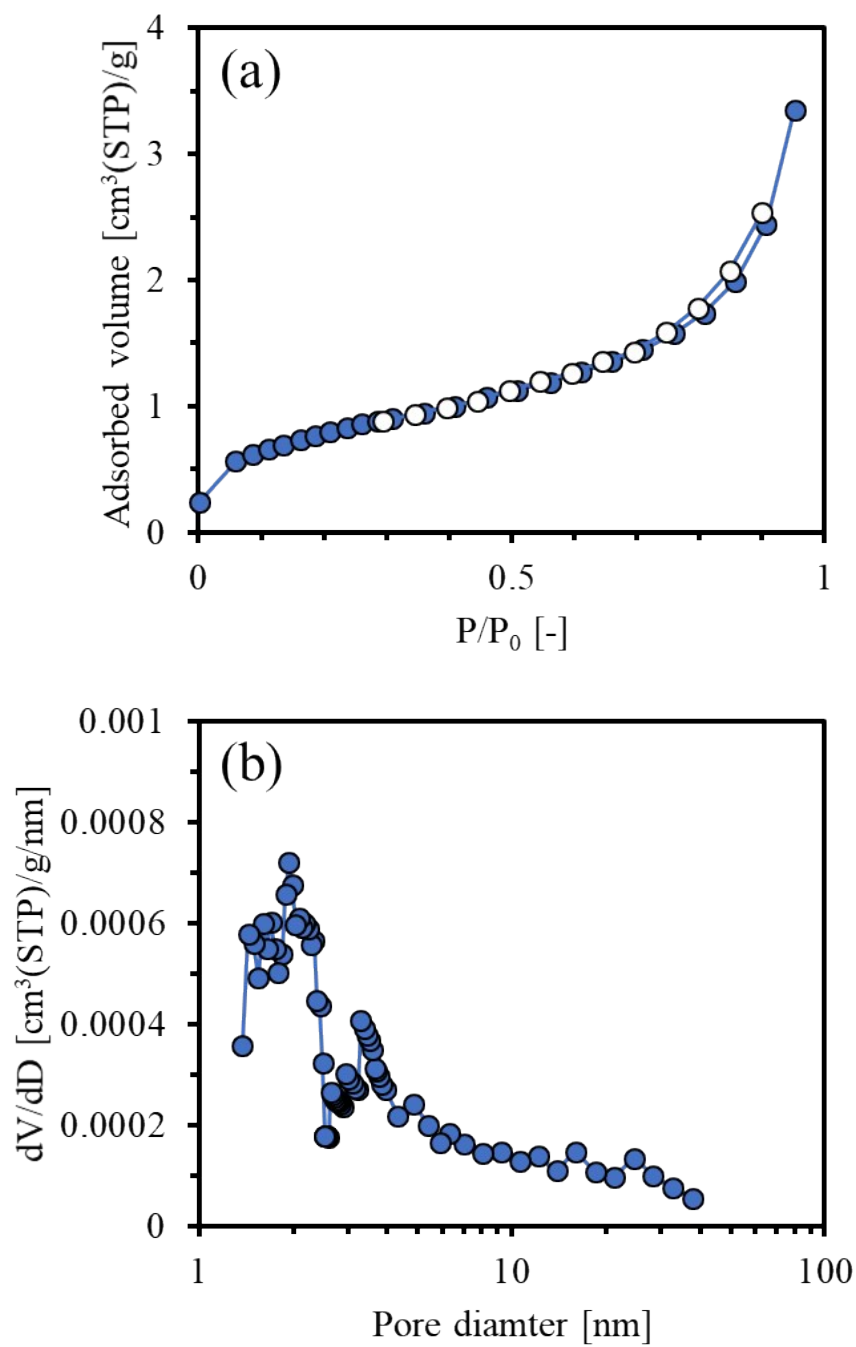


Fig. S8 (a) Adsorption and desorption isotherms of nitrogen and (b) the pore size distributions for the Pt₂Y bulk nanopowder. The pore size distribution was analysed from the measured isotherms using the Barrett, Joyner, and Halenda (BJH) method.