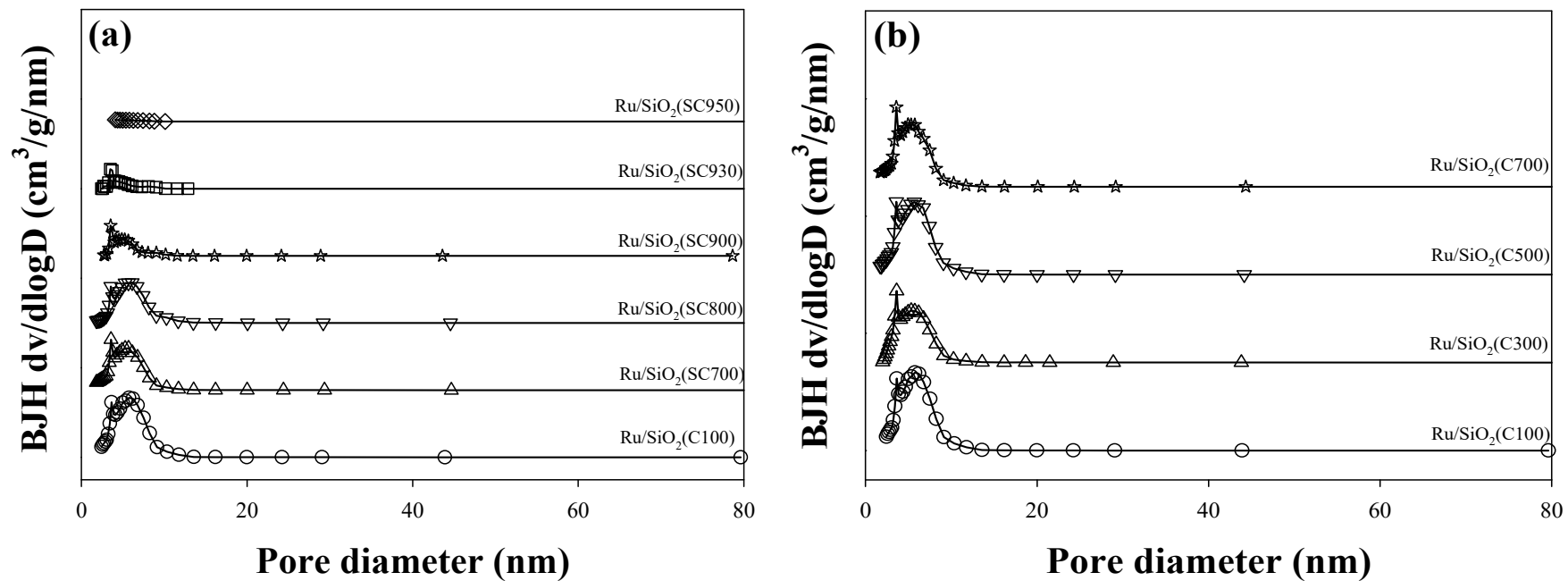
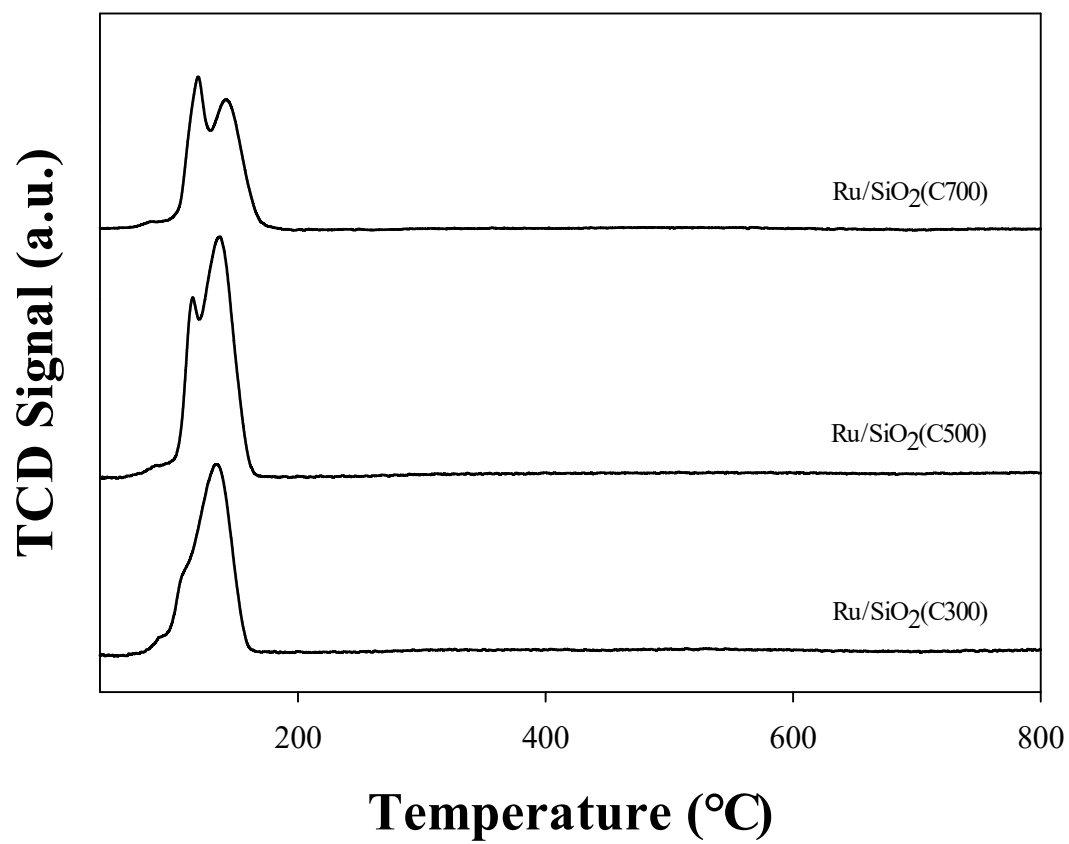


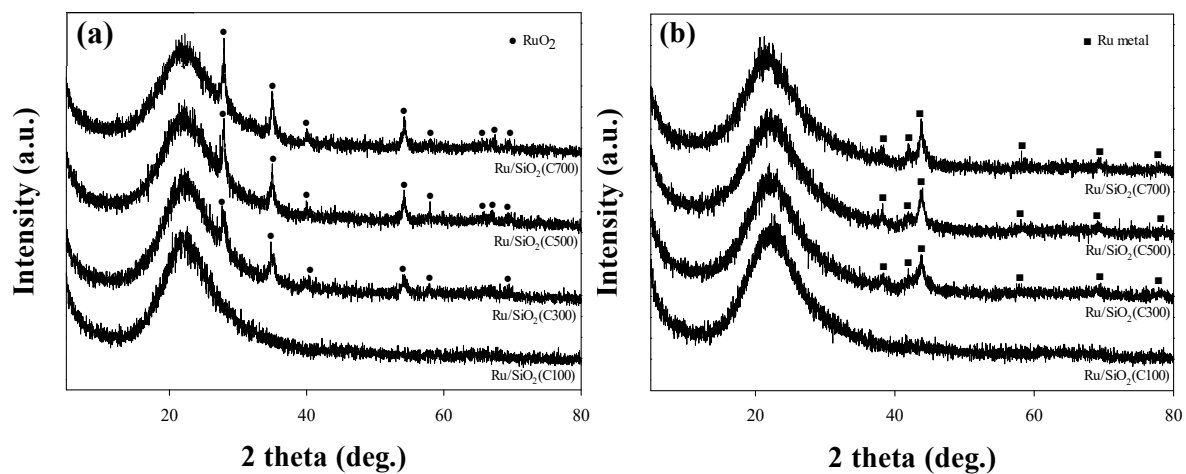
**Figure S1.** (a) N<sub>2</sub> adsorption (filled points) and desorption (unfilled points) isotherms of Ru/SiO<sub>2</sub>(C100) (○), Ru/SiO<sub>2</sub>(SC700) (△), Ru/SiO<sub>2</sub>(SC800) (▽), Ru/SiO<sub>2</sub>(SC900) (☆), Ru/SiO<sub>2</sub>(SC930) (□), and Ru/SiO<sub>2</sub>(SC950) (◇) and (b) N<sub>2</sub> adsorption (filled points) and desorption (unfilled points) isotherms of Ru/SiO<sub>2</sub>(C100) (○), Ru/SiO<sub>2</sub>(C300) (△), Ru/SiO<sub>2</sub>(C500) (▽), Ru/SiO<sub>2</sub>(C700) (☆).



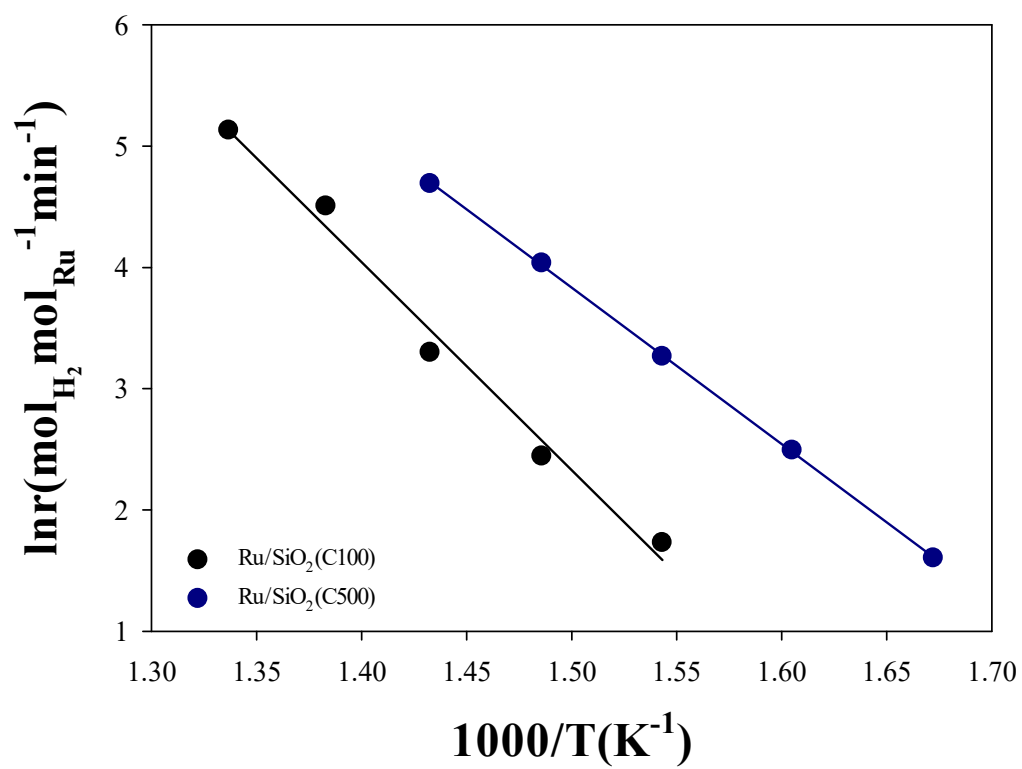
**Figure S2.** (a) Pore size distribution of Ru/SiO<sub>2</sub>(C100) (○), Ru/SiO<sub>2</sub>(SC700) (△), Ru/SiO<sub>2</sub>(SC800) (▽), Ru/SiO<sub>2</sub>(SC900) (☆), Ru/SiO<sub>2</sub>(SC930) (□), and Ru/SiO<sub>2</sub>(SC950) (◇) and (b) pore size distribution of Ru/SiO<sub>2</sub>(C100) (○), Ru/SiO<sub>2</sub>(C300) (△), Ru/SiO<sub>2</sub>(C500) (▽), Ru/SiO<sub>2</sub>(C700) (☆).



**Figure S3.** Temperature programmed reduction with H<sub>2</sub> (H<sub>2</sub>-TPR) patterns of Ru/SiO<sub>2</sub> calcined at different temperatures such as Ru/SiO<sub>2</sub>(C300), Ru/SiO<sub>2</sub>(C500), and Ru/SiO<sub>2</sub>(C700).



**Figure S4.** X-ray diffraction (XRD) patterns for Ru/SiO<sub>2</sub> catalysts calcined at different temperatures (a) and Ru/SiO<sub>2</sub> catalysts calcined at different temperatures and then reduced with H<sub>2</sub> at 350 °C (b).



**Figure S5.** Arrhenius plot for ammonia decomposition over Ru/SiO<sub>2</sub>(C100) and Ru/SiO<sub>2</sub>(C500).