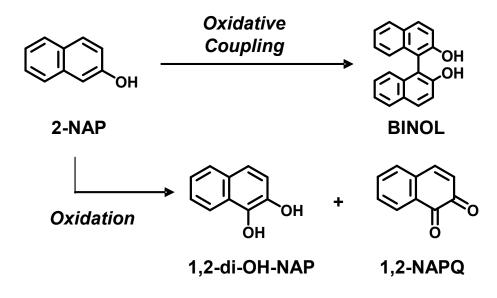
Room-temperature selective oxidation of 2naphthol to BINOL by a Au/SrTiO₃-H₂O₂ thermocatalytic system

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Scheme S1. Oxidation of 2-naphthol (2-NAP).

Experimental details

Catalyst preparation and characterization

Au NPs with varying size were loaded on $SrTiO_3$ particles (Aldrich, mean particle size < 100 nm) by the heating temperature-varied deposition precipitation (TV-DP) method using HAuCl₄ as a starting material.^{28,29} Before use for preparation of Au/SrTiO₃, SrTiO₃ particles were calcined at 923 K for 4 h prior, which allows us to neglect the changes of SrTiO₃ with different heating temperature below 873 K. The pH

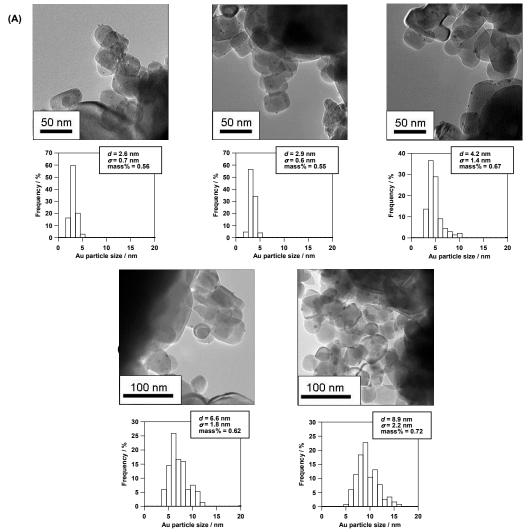
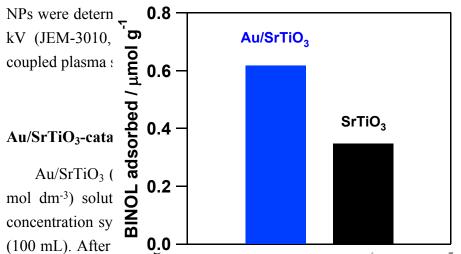


Fig. S1 TEM images and size distribution of Au/SrTiO₃: (A) $T_c = 673$ K, $t_c = 1$ h, (B) $T_c = 673$ K, $t_c = 4$ h, (C) $T_c = 773$ K, $t_c = 4$ h, (D) $T_c = 873$ K, $t_c = 4$ h, (E) $T_c = 873$ K, $t_c = 24$ h: T_c and t_c denote the heating temperature and time, respectively.

of aqueous HAuCl₄ solution (4.86 mM, 100 mL) was adjusted to 6 by the addition of 1 M NaOH aqueous solution. SrTiO₃ particles (10 g) were added to the solution, and the suspension was heated at 343 K for 1 h. After cooling to room temperature, the particles

were collected by centrifugation, and washed with H₂O. The dried particles were calcined at the heating temperature (T_c) and time (t_c). The mean diameters of the Au



d voltage of 300 by inductively

m⁻³ or 1.0×10^{-3} low 2-naphthol intration system) 2 (4.0 × 10⁻³ mol

dm⁻³ in the low 2-naphthol concentration system or 4.0×10^{-1} mol dm⁻³ in the high 2n:**Fig. S2** Adsorbing amount of BINOL on Au(d = 2.9 nm)/SrTiO₃ or SrTiO₃. 2

1600, Sinnadzu) and ingn-performance inquid enromatography (LC-0 AD, Si D-0 A, C-R8A (Shimadzu)) [measurement conditions : column = Shim-pack CLC-ODS (4.6 mm×150 mm) (Shimadzu); mobile phase MeOH : $H_2O = 7 : 3 \text{ v/v}$; flow rate = 0.5 mL min⁻¹; $\lambda = 223 \text{ nm}$].

Adsorption measurements.

Adsorption experiments were carried out by exposing Au/SrTiO₃ or SrTiO₃ (10 mg) to BINOL (5.0×10^{-6} mol dm⁻³) solution (H₂O : acetonitrile = 99 : 1 v/v) (10 mL) solutions at 298 K for 2 h in the dark. The adsorbing amount was determined by UV/Vis spectroscopy (UV-1800, Shimadzu) and high-performance liquid chromatography (LC-6 AD, SPD-6 A, C-R8A (Shimadzu)) [measurement conditions : column = Shim-pack CLC-ODS (4.6 mm×150 mm) (Shimadzu); mobile phase MeOH : H₂O = 7 : 3 v/v; flow rate = 0.5 mL min⁻¹; λ = 223 nm].