Supporting Information

“Photo-assisted Anodic Electrodeposition of Ceria Thin Films”

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Figure S1. Reflectance spectra of films electrodeposited in oxygen-saturated 0.05 M Ce(CH$_3$COO)$_3$ without (a) and with (b) UV illumination at 0.8 V and 313 K for 1 h. The vertical axis was normalized for the bare Pt substrate.
Figure S2. Anodic polarization curve of Pt/PtO₅ electrode in 0.1 M K₂SO₄, where the electrode was irradiated with UV light intermittently (on-off). The Pt/PtO₅ electrode was fabricated by potentiostatic electrolysis of a bare Pt at 1.5 V for 1 h in 0.1 M K₂SO₄.
Figure S3. SEM images of the film surfaces prepared by photo-electroless deposition in (a) naturally aerated and (b) an oxygen-saturated 0.05 M Ce(CH$_3$COO)$_3$ solution at 313 K for 5 h. Owing to the numerous linear tracks attributed to the bare Pt surface in the former case, deposition scarcely occurred. In contrast, close-packed small grains were observed in the latter case. Thus, it was established that the oxygen in the solution can promote the oxidation of Ce$^{3+}$. 
**Figure S4.** Anodic polarization curves of bare SUS and SUS/CeO$_2$ (prepared at 0.8 V for 1 h under UV illumination) in naturally aerated 0.1 M NaCl (scan rate: 2 mV/s).