

Supporting Information for

Arrangement effect of di- μ -oxo dimanganese catalyst and

$\text{Ru}(\text{bpy})_3^{2+}$ photoexcitation centers adsorbed in mica on

visible-light-derived water oxidation

Masanari Hirahara,^a Hirosato Yamazaki,^a Satoshi Yamada,^a Kazuki Matsubara,^a Kenji Saito,^{a,b}
Tatsuto Yui,^a Masayuki Yagi*^{a,b}

^aDepartment of Materials Science and Technology, Faculty of Engineering, and Center for Transdisciplinary Research, Niigata University, 8050 Ikarashi-2, Niigata 950-2181, Japan

^bPrecursory Research for Embryonic Science (PRESTO), Japan Science and Technology Agency (JST), 4-1-8 Honcho, Kawaguchi, Saitama 332-0012, Japan

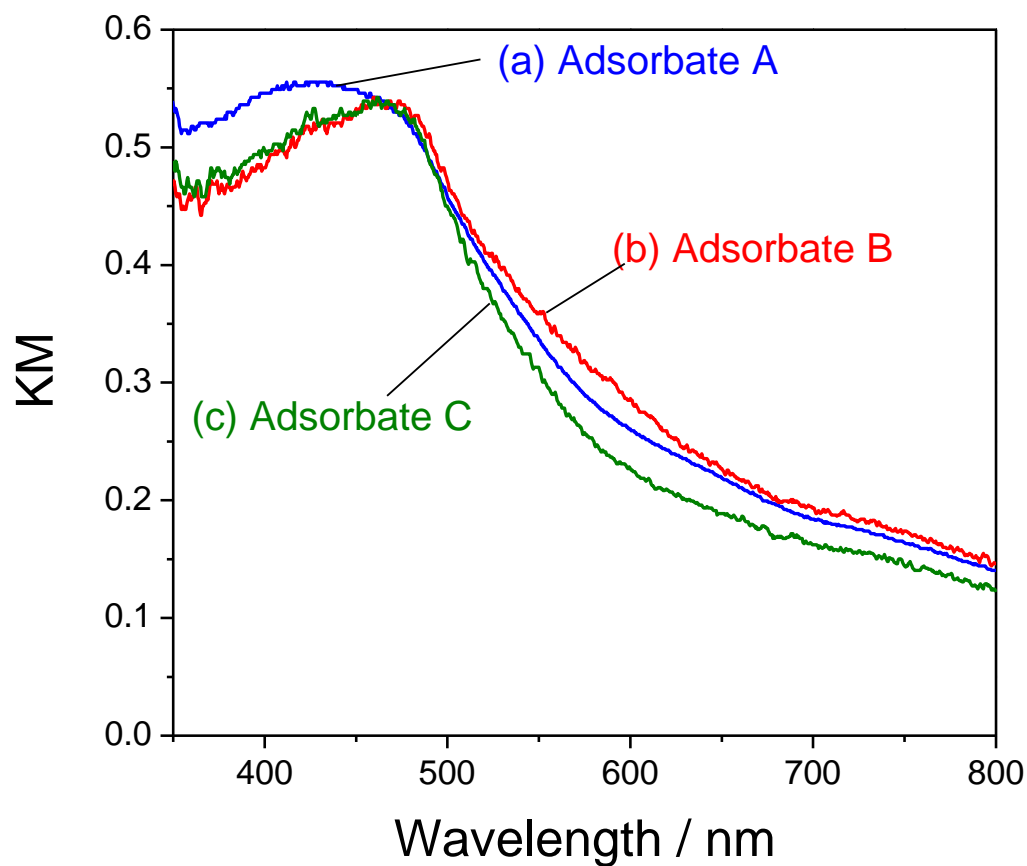


Figure S1. UV-vis DR spectra of the mica adsorbates (20 mg). (a) Adsorbate A (mica / **1** / Ru(bpy)₃²⁺) ($w_{\text{Mn}} = 164 \mu\text{mol g}^{-1}$, $w_{\text{Ru}} = 30 \mu\text{mol g}^{-1}$), (b) Adsorbate B (mica / Ru(bpy)₃²⁺ / **1**) ($w_{\text{Mn}} = 164 \mu\text{mol g}^{-1}$, $w_{\text{Ru}} = 100 \mu\text{mol g}^{-1}$), and (c) Adsorbate C (mica / (**1** + Ru(bpy)₃²⁺)) ($w_{\text{Mn}} = 164 \mu\text{mol g}^{-1}$, $w_{\text{Ru}} = 75 \mu\text{mol g}^{-1}$)

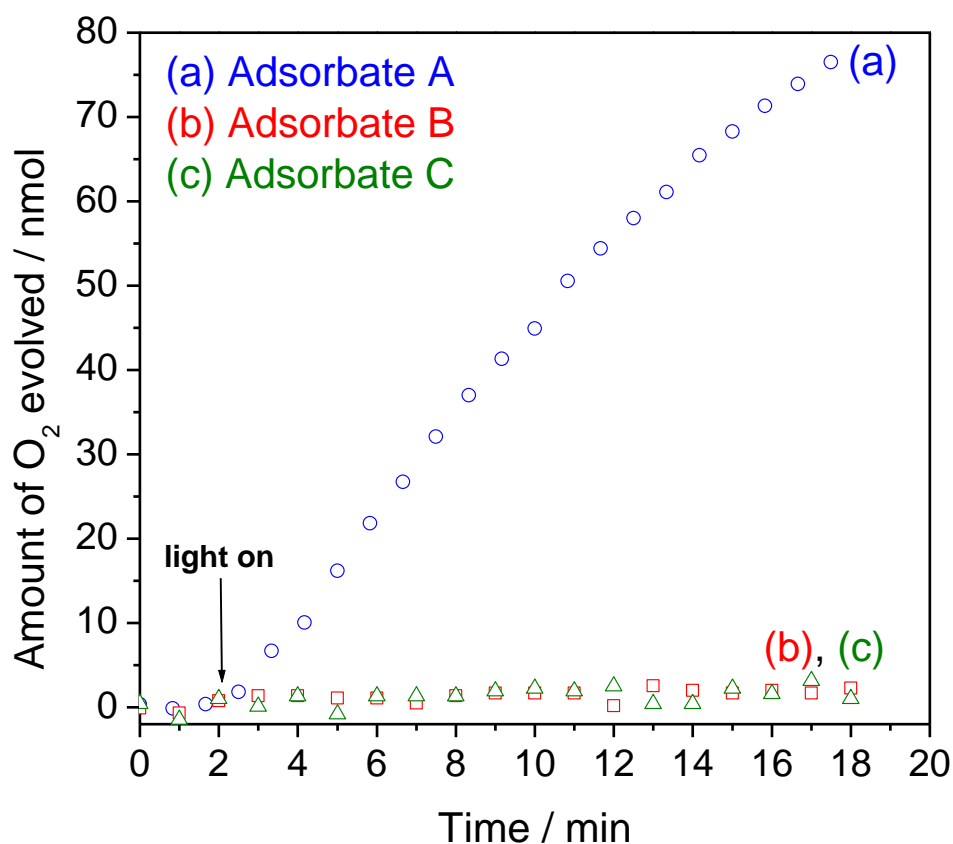


Figure S2. Time courses of the amount of O₂ evolved in photochemical water oxidation in an aqueous suspension of 0.2 M acetate buffer (2.0 ml, pH = 6.2) and 15 mM S₂O₈²⁻ containing (a) Adsorbate A (mica / **1** / Ru(bpy)₃²⁺) ($w_{\text{Mn}} = 164 \mu\text{mol g}^{-1}$, $w_{\text{Ru}} = 30 \mu\text{mol g}^{-1}$, 20 mg mica), (b) Adsorbate B (mica / Ru(bpy)₃²⁺ / **1**) ($w_{\text{Mn}} = 164 \mu\text{mol g}^{-1}$, $w_{\text{Ru}} = 100 \mu\text{mol g}^{-1}$, 20 mg mica), and (c) Adsorbate C (mica / (**1** + Ru(bpy)₃²⁺)) ($w_{\text{Mn}} = 164 \mu\text{mol g}^{-1}$, $w_{\text{Ru}} = 75 \mu\text{mol g}^{-1}$, 20 mg mica). A 150 W halogen lamp with a UV-cut filter, ($\lambda > 420 \text{ nm}$, 127 mW cm^{-2}) was used as a light source.