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SUPPLEMENTARY INFORMATION

Light-triggered and cysteine-mediated nitric oxide release from a biodegradable starch-based film

Antonio Carlos Roveda Jr.[†], *Helena de Fazio Aguiar*[#], *Katrina M. Miranda*[‡], *Carmen Cecília Tadini*[#], *Douglas Wagner Franco*[†]*.

[†]Instituto de Química de São Carlos, Universidade de São Paulo – USP, P.O.Box 780, CEP 13566-590, São Carlos, SP, Brazil

[#]Department of Chemical Engineering, Escola Politécnica, University of São Paulo, Av. Prof. Luciano Gualberto, Travessa 3, nº 380, São Paulo, SP, Brazil

[‡]Department of Chemistry and Biochemistry, University of Arizona, Tucson, Arizona 85721, United States

Corresponding Author

*E-mail: douglas@iqsc.usp.br

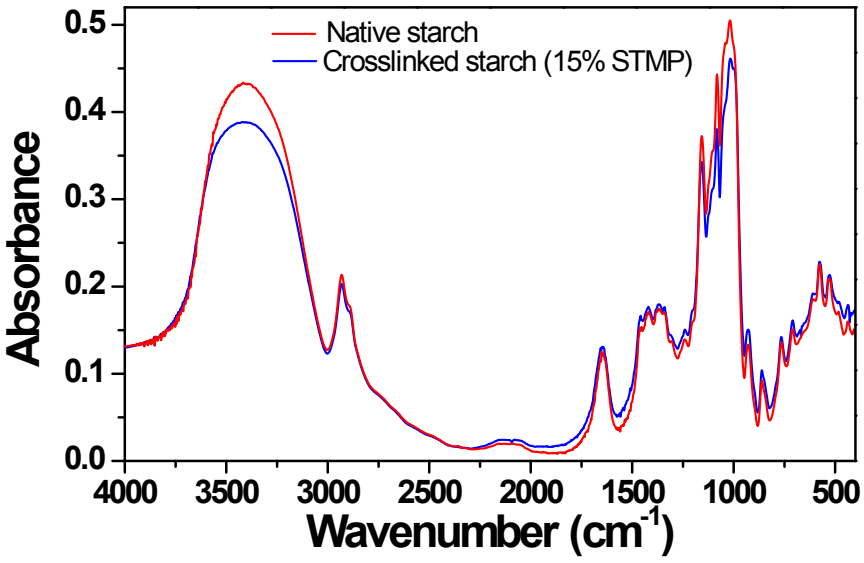

Figure S1. FT-IR spectra of native and modified (crosslinked with 15% STMP) starch.

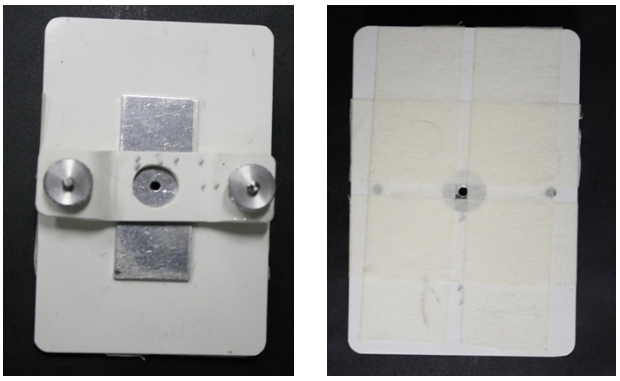

Fig. S2. FT-IR cell holder used for photolysis of CS films.

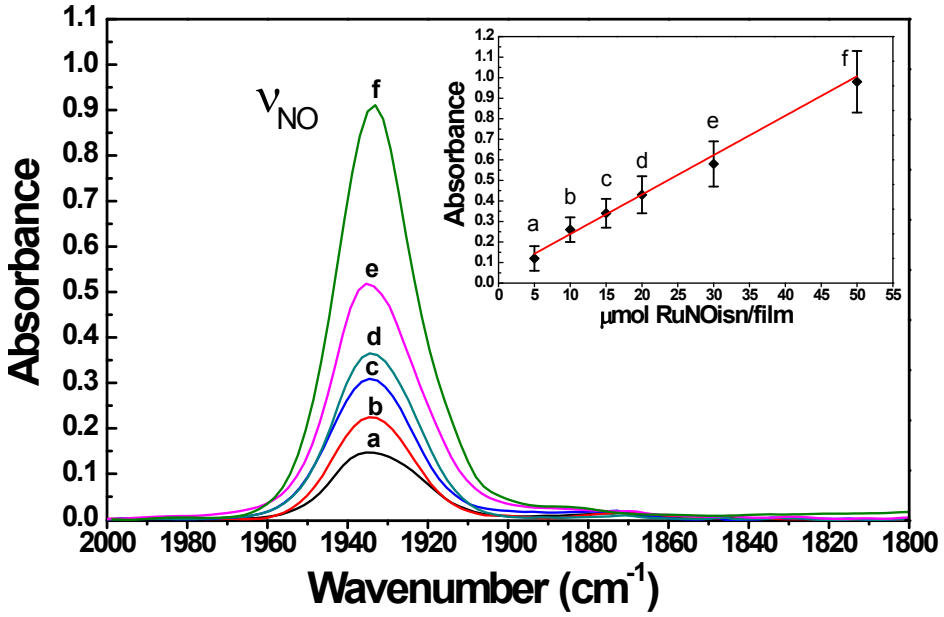

Fig. S3. FT-IR of **CS_x-RuNOisn** with different **RuNOisn** contents/film (in µmol of **RuNOisn**/film). Concentrations of 5, 10, 15, 20, 30, 50 µmol **RuNOisn**/film are represented respectively by the spectra with labels "*a"* to "*f"*. Inset: plot of **RuNOisn** content/film *vs.* NO stretch absorbance, $R^2 = 0.9905$.

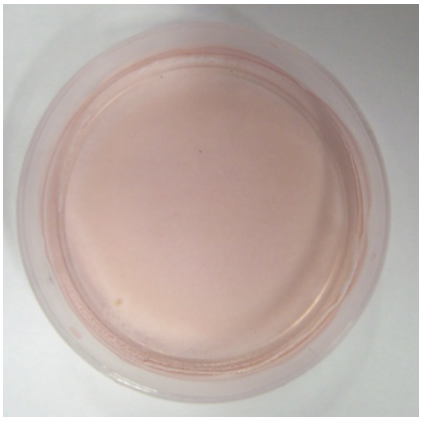

Fig. S4. Photograph of a cassava starch film containing *trans*-$[Ru^{II}(NH_3)_4(isn)(NO^+)](BF_4)_3$.

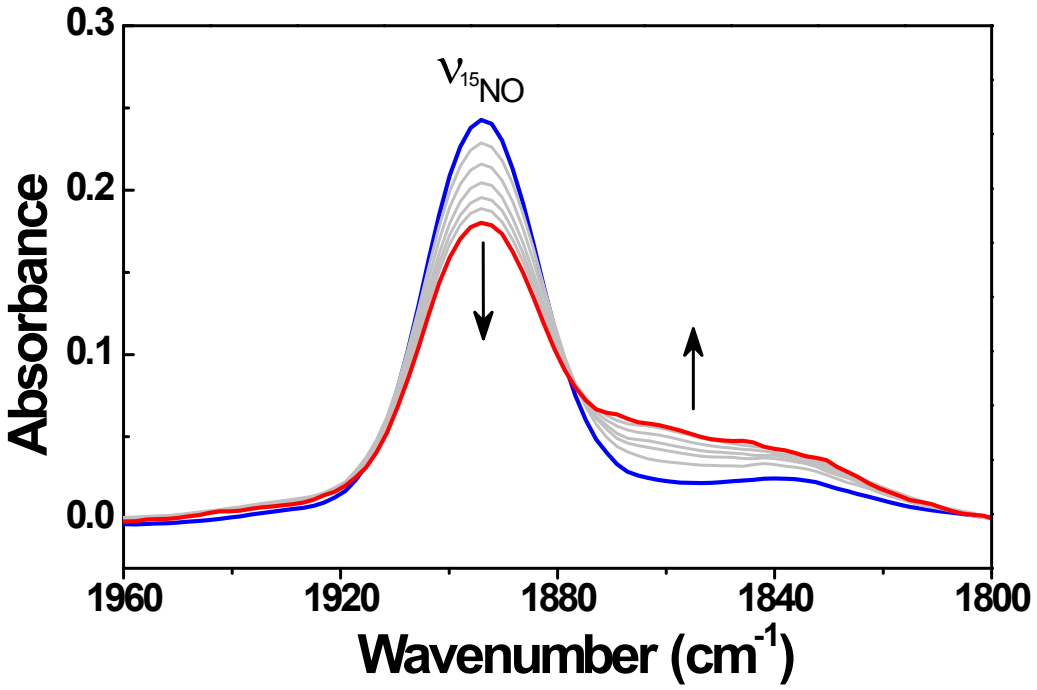

Fig. S5. Spectral changes during photolysis of CS film containing *trans*-[$Ru(NH_3)_4(isn)(^{15}NO^+)$]. Conditions: λ_{irr} = 355 nm, 5 mJ/pulse.

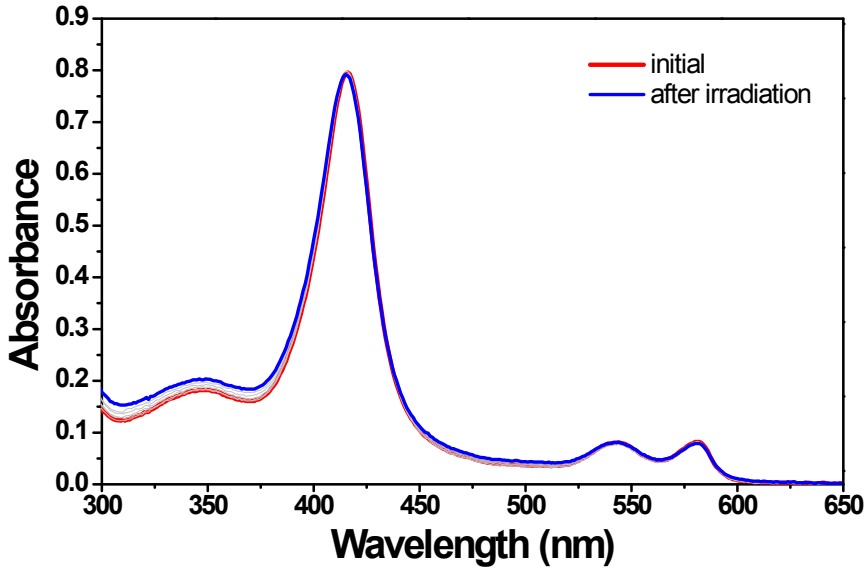

Fig. S6. Spectral changes during photolysis of a solution containing oxyMb and a ruthenium-free CS film. Conditions: 1 cm^2 of ruthenium-free CS film and 5.8 μM of oxyMb in a phosphate buffer solution (pH 7.4, 100 mM); 1000 laser pulses, λ_{irr} = 355 nm, 5 mJ/pulse, T = 2 ºC.

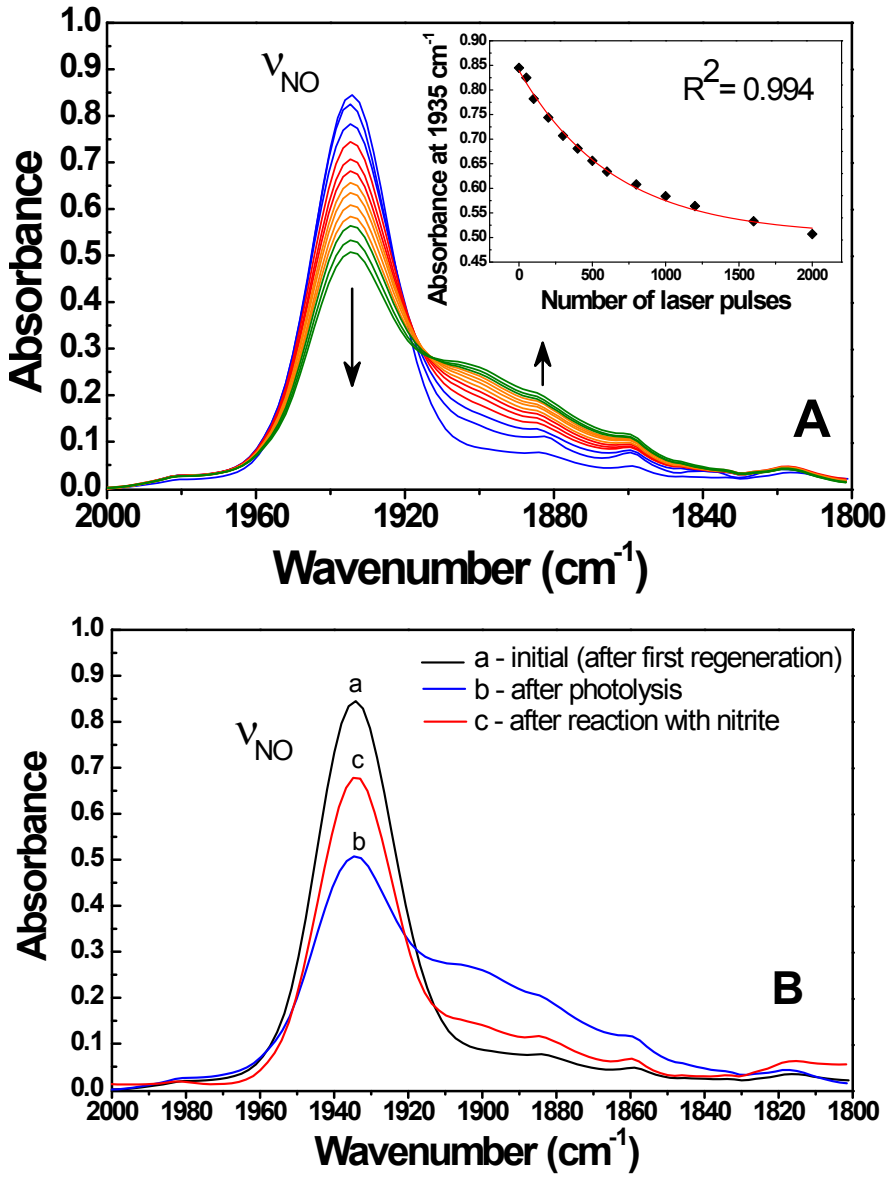

Fig. S7. (A) Spectral changes during a second cycle of irradiation of **CS_{50}-RuNOisn** (λ_{irr} = 355 nm, 5 mJ/pulse). The inset shows the changes in the absorbance at 1935 cm^{-1} during photolysis. **(B)** Second regeneration of photolyzed **CS_{50}-RuNOisn** after reaction with 1.0 mM nitrite.

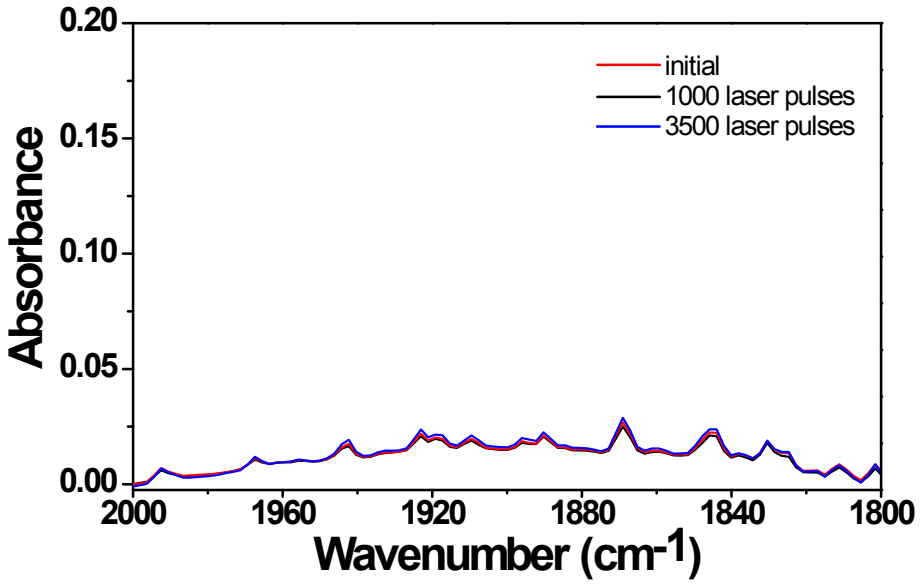

Fig. S8 – Photolysis of a ruthenium-free starch-based film dipped in aqueous nitrite solution. Conditions: Film immersed in solution of sodium nitrite (10.0 mM) for 20 min. Photolysis: λ_{irr} = 355 nm, 5mJ/ pulse, a pulse every 2 seconds.

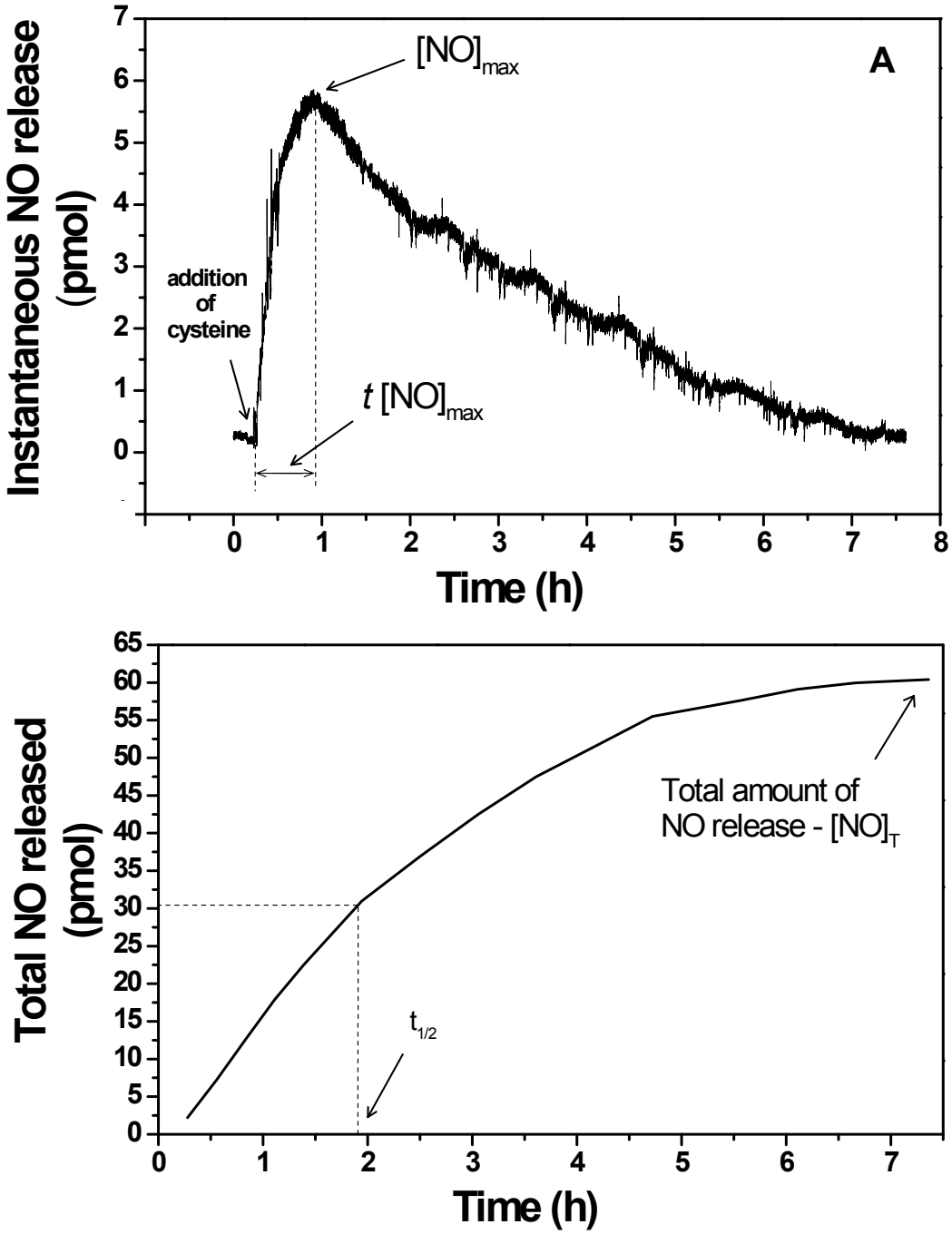

Fig. S9. (A) Real time NO release profile and **(B)** plot of t[NO] *vs*. time for cysteine-initiated NO release from **RuNOisn**. Conditions: 1.77 μmol of **RuNOisn**, TRIS buffer 0.150 M, 5 mM EDTA, pH 7.4 at 37 ºC. $[NO]_{max}$ = maximum flux of NO release; $t[NO]_{max}$ = the time until $[NO]_{max}$.