

Electronic Supplementary Information

Impacts of negatively charged colloidal clay particles on photoisomerization of both of the anionic and cationic azobenzene molecules

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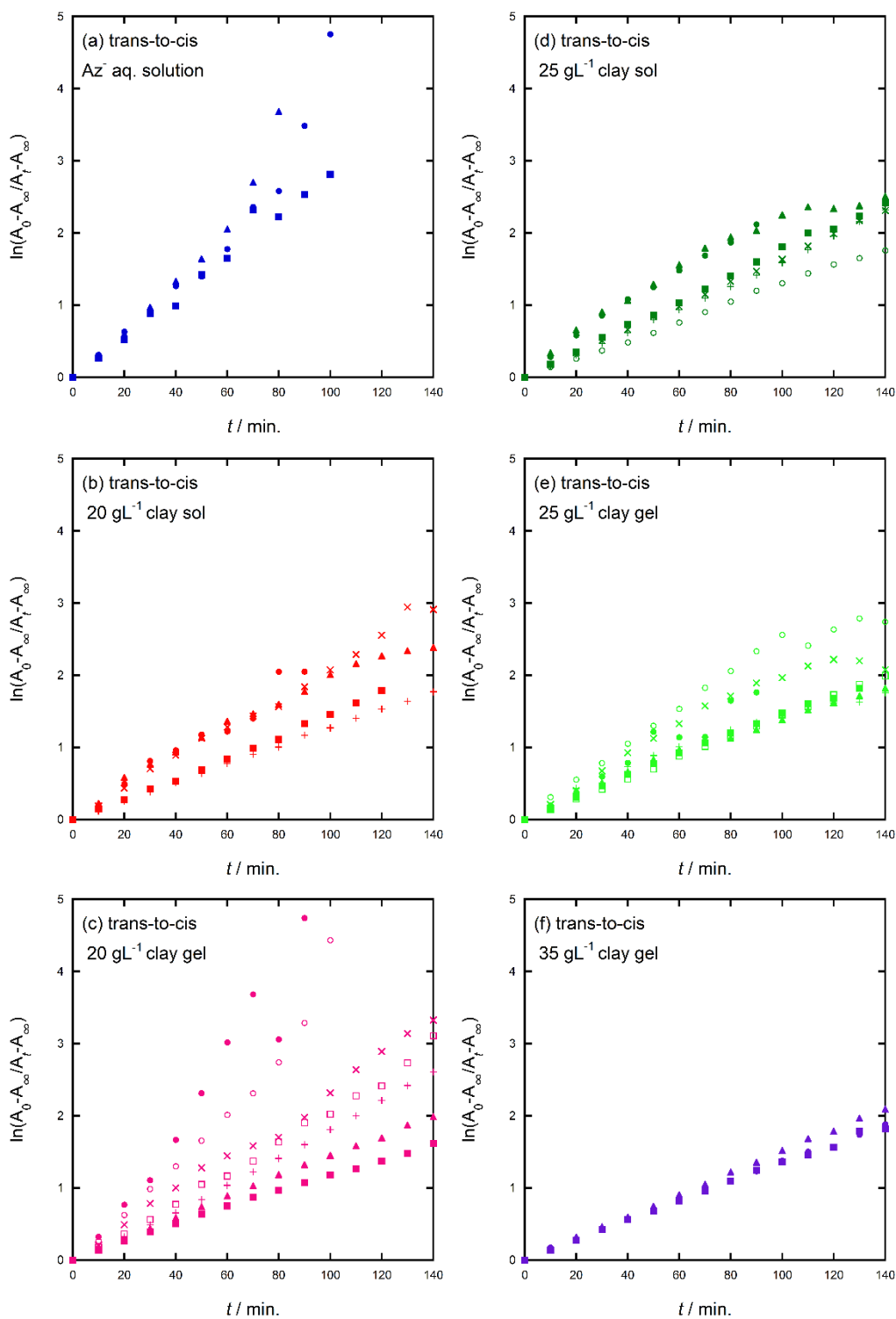


Figure S1. First-order plots against UV light irradiation time for Az^- systems from trans to cis form. (a) Az^- aqueous solution, (b) 20 g L^{-1} clay sol with Az^- , (c) 20 g L^{-1} clay gel with Az^- , (d) 25 g L^{-1} clay sol with Az^- , (e) 25 g L^{-1} clay gel with Az^- , (f) 35 g L^{-1} clay gel with Az^- .

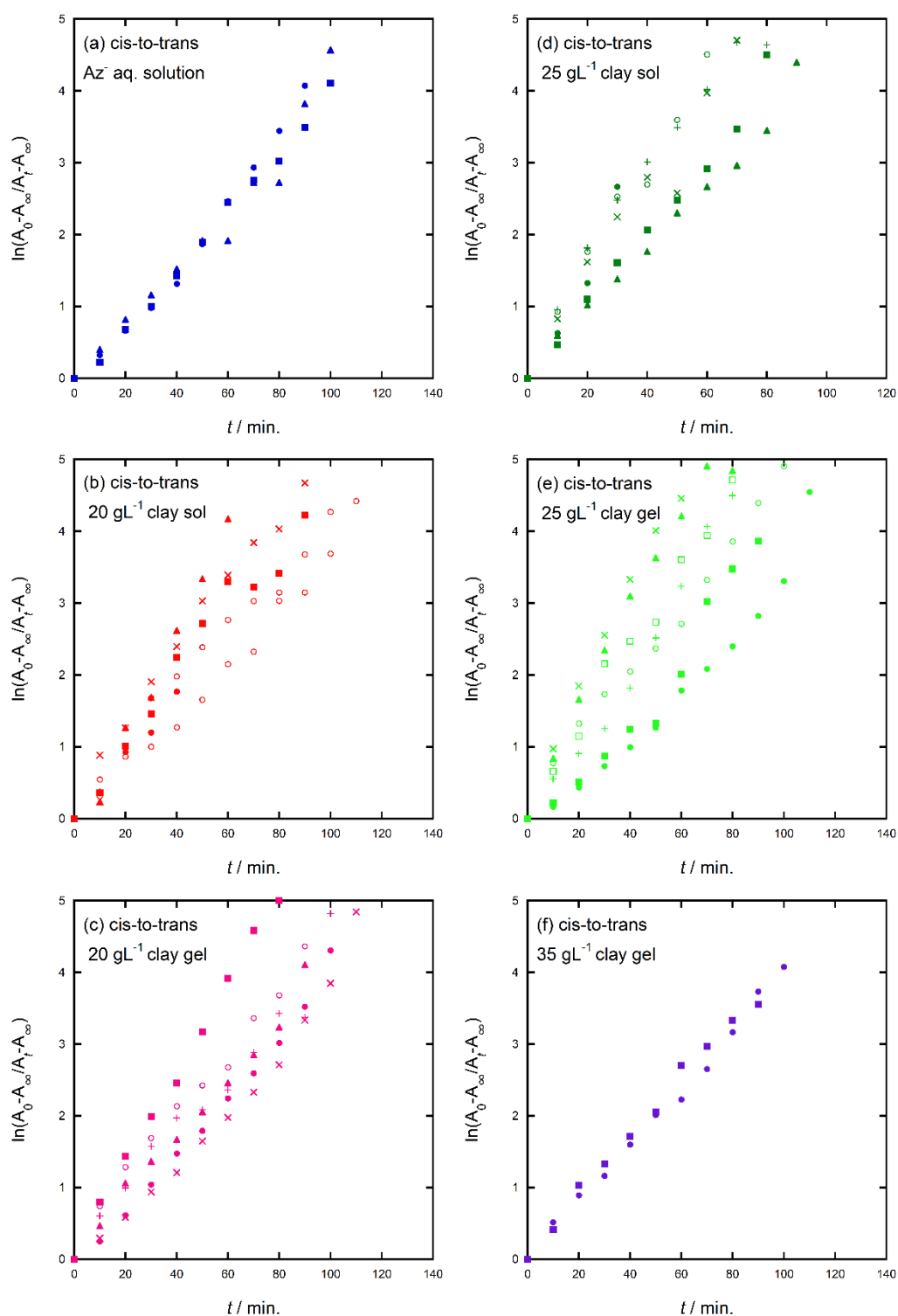


Figure S2. First-order plots against visible light irradiation time for Az⁻ systems from cis to trans form. (a) Az⁻ aqueous solution, (b) 20 g L⁻¹ clay sol with Az⁻, (c) 20 g L⁻¹ clay gel with Az⁻, (d) 25 g L⁻¹ clay sol with Az⁻, (e) 25 g L⁻¹ clay gel with Az⁻, (f) 35 g L⁻¹ clay gel with Az⁻.

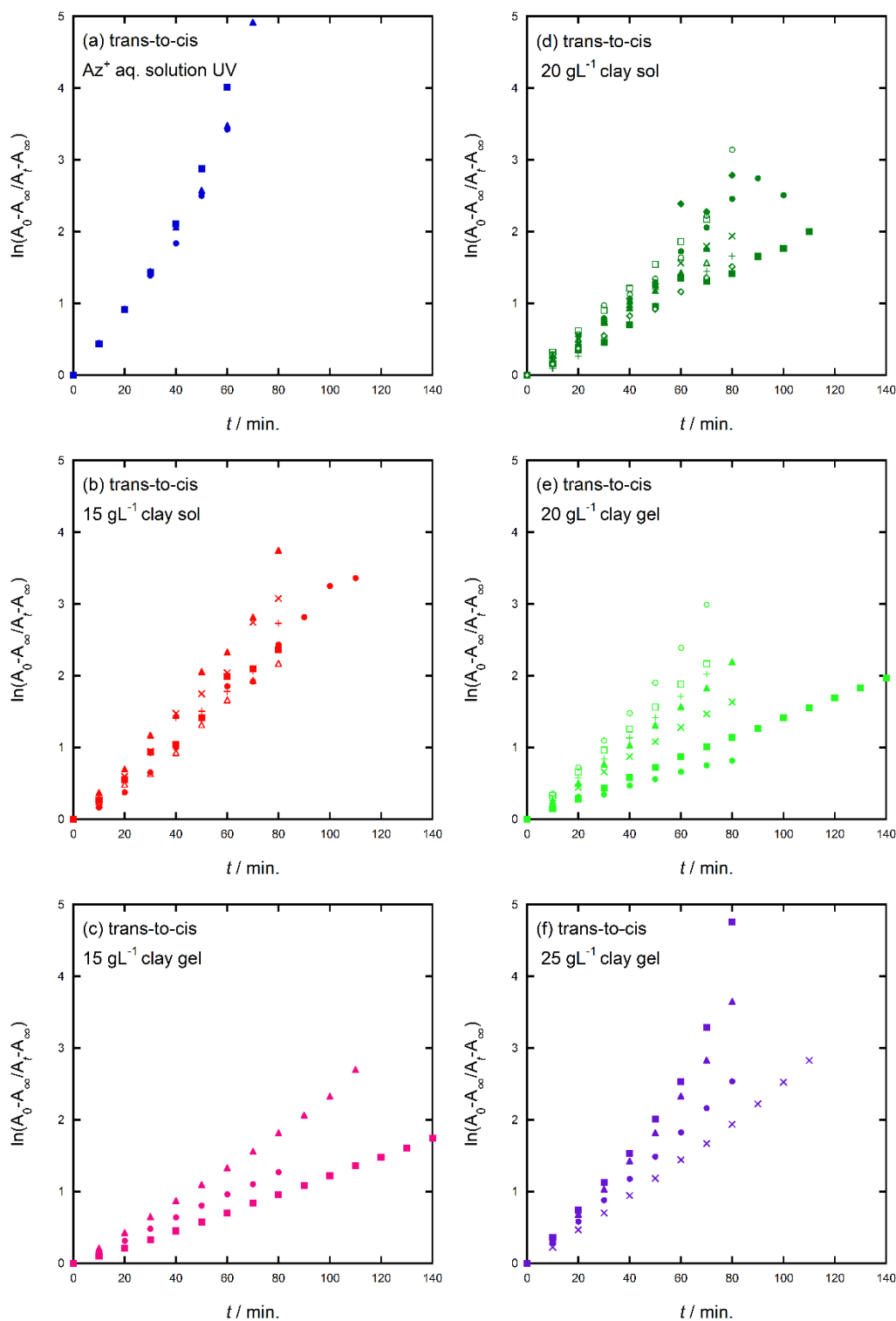


Figure S3. First-order plots against UV light irradiation time for Az^+ systems from trans to cis form. (a) Az^+ aqueous solution, (b) 15 g L^{-1} clay sol with Az^+ , (c) 15 g L^{-1} clay gel with Az^+ , (d) 20 g L^{-1} clay sol with Az^+ , (e) 20 g L^{-1} clay gel with Az^+ , (f) 25 g L^{-1} clay gel with Az^+ .

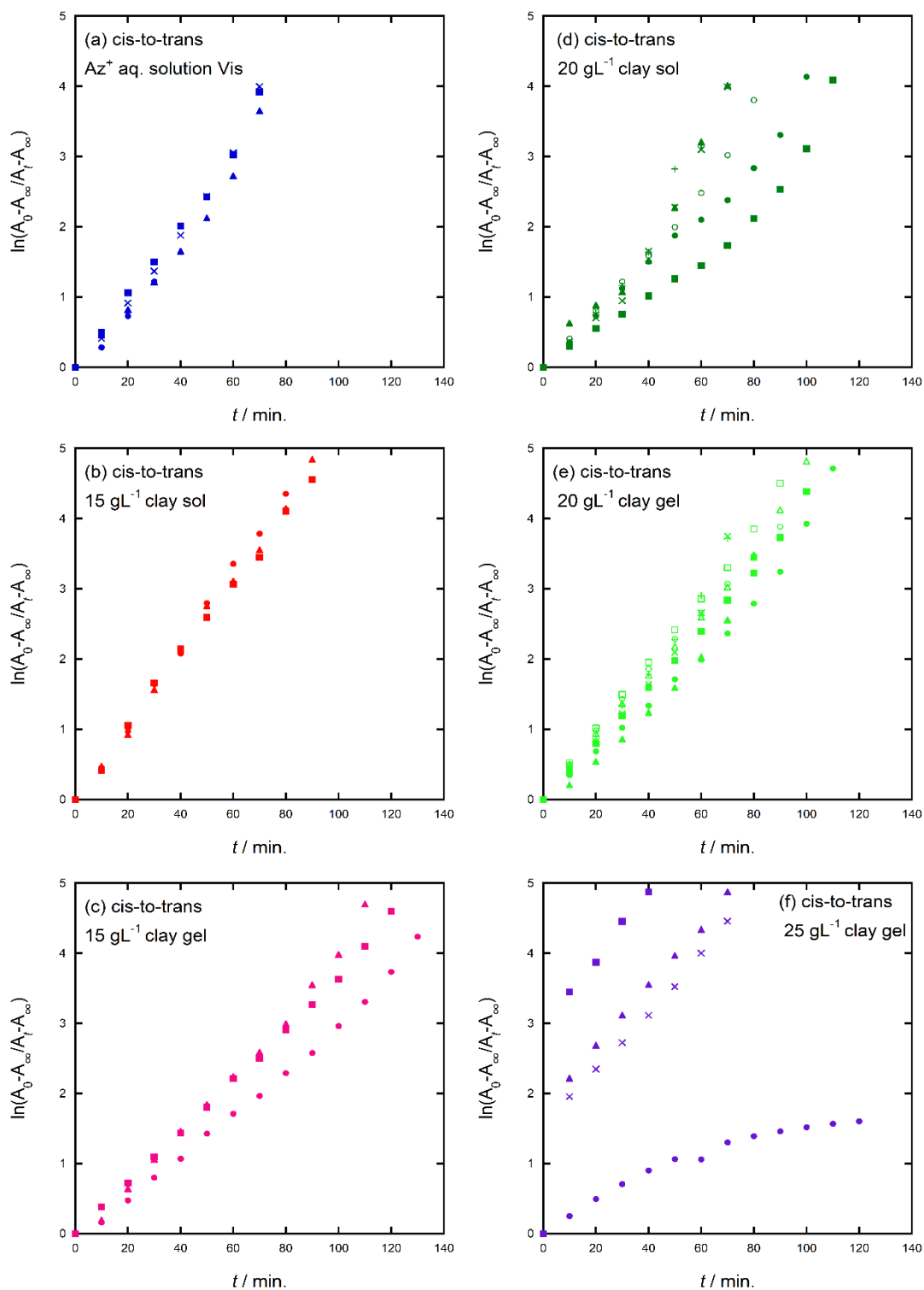


Figure S4. First-order plots against visible light irradiation time for Az⁺ systems from cis to trans form. (a) Az⁺ aqueous solution, (b) 15 g L⁻¹ clay sol with Az⁺, (c) 15 g L⁻¹ clay gel with Az⁺, (d) 20 g L⁻¹ clay sol with Az⁺, (e) 20 g L⁻¹ clay gel with Az⁺, (f) 25 g L⁻¹ clay gel with Az⁺.

Table S1. First-order rate constants for trans-to-cis and cis-to-trans photoisomerization of azobenzene dissolved in the clay colloids.

Azobenzene species	Clay concentration / g L ⁻¹	Sample status	Trans-to-cis rate constant / min ⁻¹	Cis-to-trans rate constant / min ⁻¹
Az⁻	0	Aqueous solution	0.0289 ± 0.0029	0.0351 ± 0.0040
	20	Clay sol	0.0198 ± 0.0058	0.0512 ± 0.0089
	20	Clay gel	0.0219 ± 0.0083	0.0503 ± 0.0167
	25	Clay sol	0.0209 ± 0.0074	0.0722 ± 0.0160
	25	Clay gel	0.0192 ± 0.0043	0.0567 ± 0.0255
	35	Clay gel	0.0149 ± 0.0009	0.0477 ± 0.0017
Az⁺	0	Aqueous solution	0.0454 ± 0.0003	0.0435 ± 0.0063
	15	Clay sol	0.0269 ± 0.0052	0.0483 ± 0.0017
	15	Clay gel	0.0158 ± 0.0044	0.0294 ± 0.0058
	20	Clay sol	0.0230 ± 0.0055	0.0374 ± 0.0061
	20	Clay gel	0.0250 ± 0.0072	0.0418 ± 0.0079
	25	Clay gel	0.0307 ± 0.0052	0.1333 ± 0.0712