Supplementary data for article:

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Supplementary Material

Photolysis of insecticide methomyl in various solvents: an experimental and theoretical study

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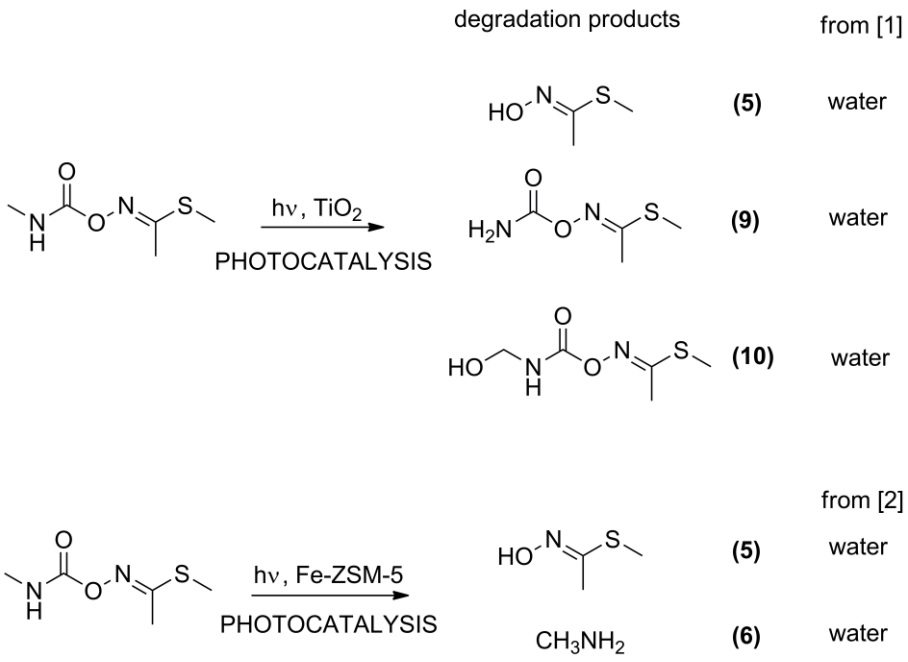
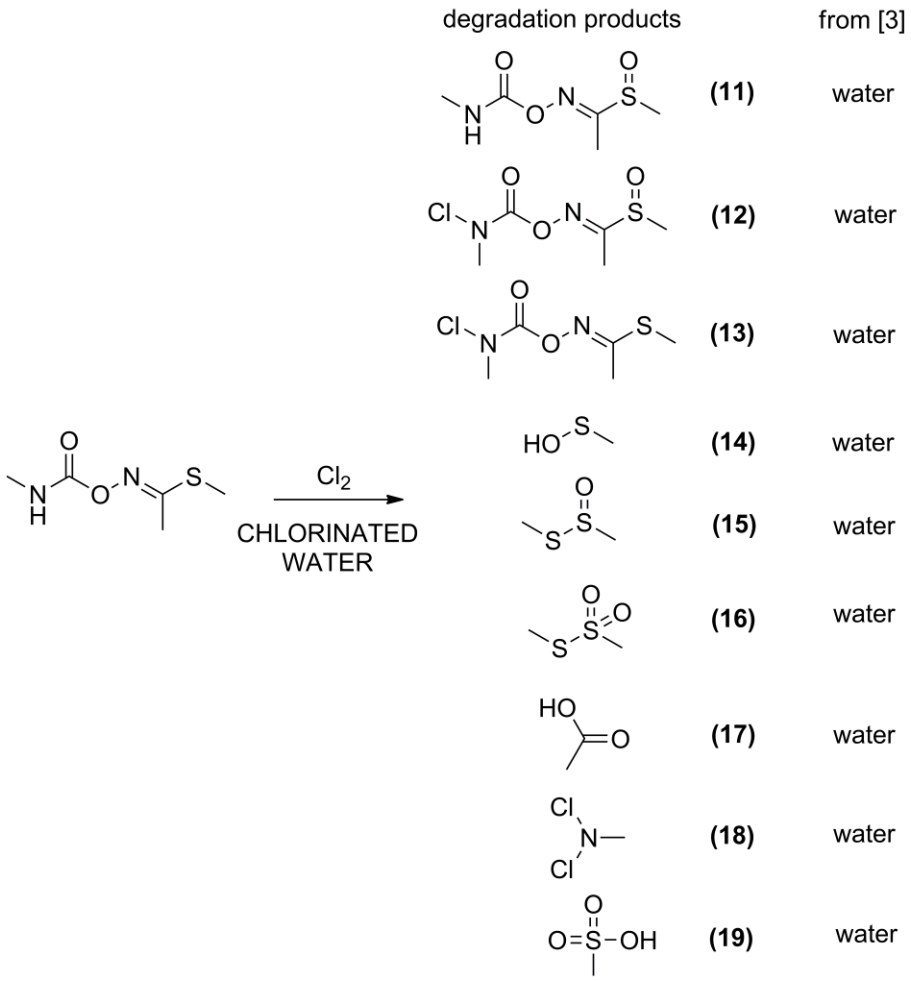
1. Introduction



Scheme S1. The products detected during methomyl photocatalysis in water.



Scheme S2. The products detected during chlorination of methomyl water solution.

2. Materials and methods

2.2. Photodegradation procedure

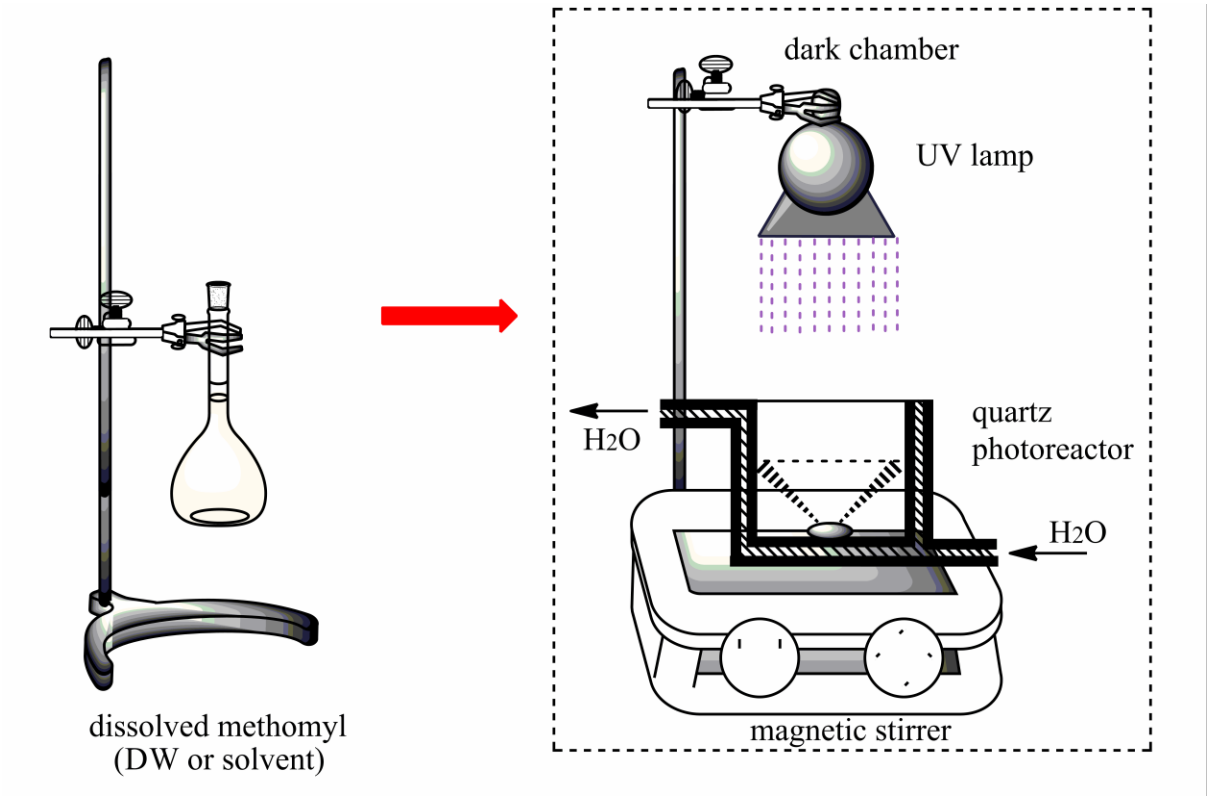


Fig. S1. Shematic presentation of photodegradation procedure.

2.3. Determination of quantum yield using chemical actinometry

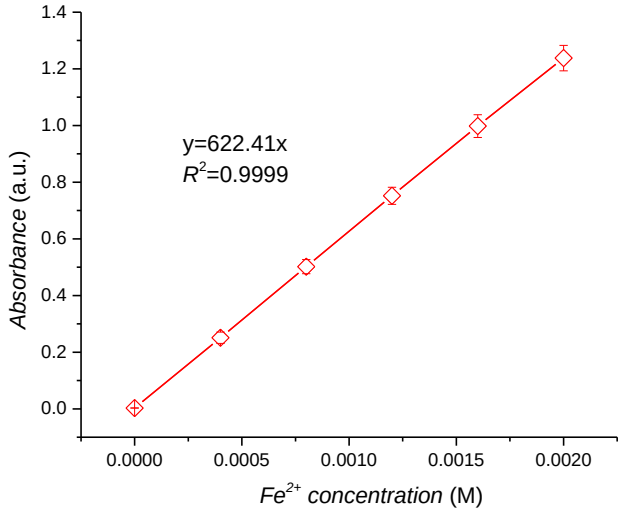


Fig. S2. The calibration curve for Fe^{2+} ions.

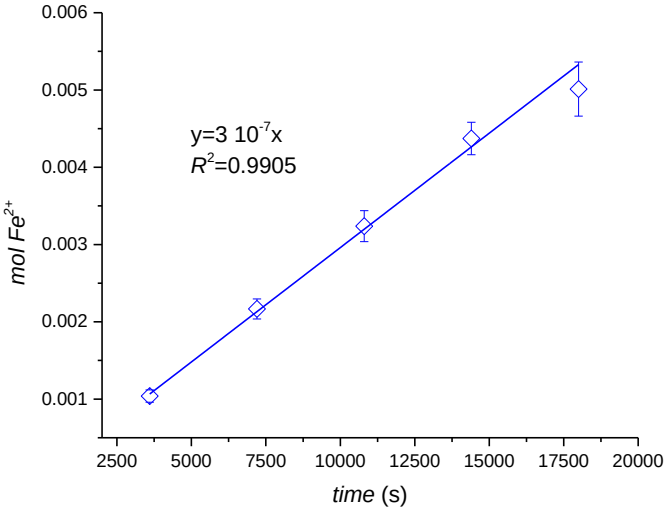


Fig. S3. A plot of Fe^{2+} concentration as a function of the irradiation time for 254 nm.

3. Results and discussion

3.1. Quantum yield of methomyl photolysis in selected solvents

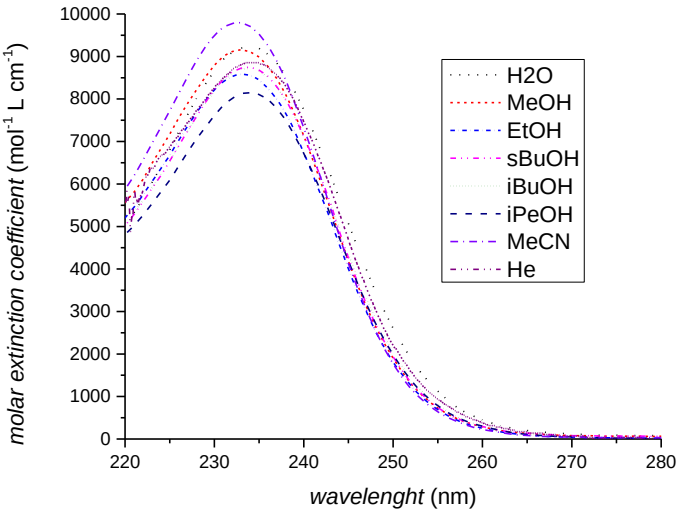


Fig. S4. UV/vis absorption spectra of methomyl in various organic solvents.

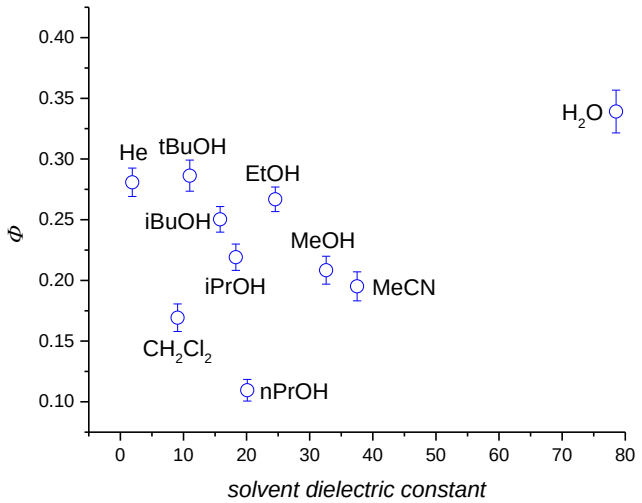


Fig. S5. The dependence of quantum yields on solvent polarity.

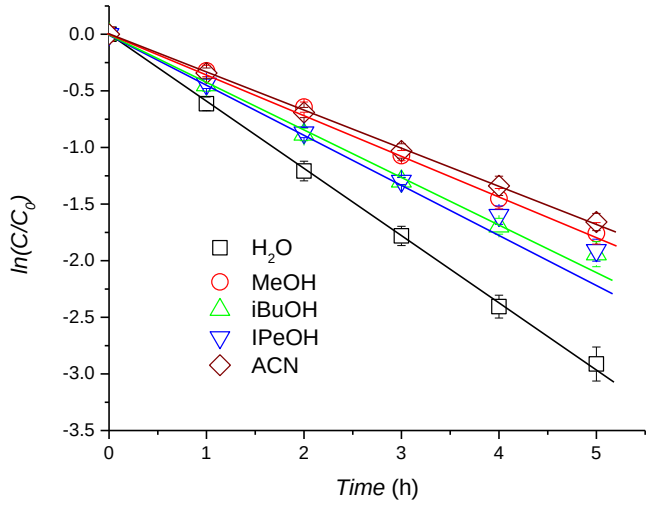


Fig. S6. Kinetics of photolysis of methomyl in the selected solvents.

The rate of methomyl photolysis was solvent-specific: a pseudo first-order kinetic model was illustrated, and obtained results are given in Table S1.

Table S1 Rate constants and half time of reaction for methomyl photolysis.

Solvent	k (h^{-1})	$t_{1/2}$ (h)
Deionized water	0.5732±0.0286	1.209
Methanol	0.3676±0.0220	1.886
Ethanol	0.4204±0.0210	1.649
n-propanol	0.2012±0.0141	3.445
isopropanol	0.3772±0.0226	1.838
sec-butanol	0.4236±0.0254	1.636
isobutanol	0.3998±0.0220	1.734
tert-butanol	0.4898± 0.0245	1.415
isopentanol	0.4111±0.0247	1.686
n-hexane	0.4686±0.0234	1.479
Acetonitrile	0.3434±0.0240	2.018
Dichloromethane	0.3176±0.0222	2.182

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