MRG-059-ZA - Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot - 2nd pH screening (5.8 -12)
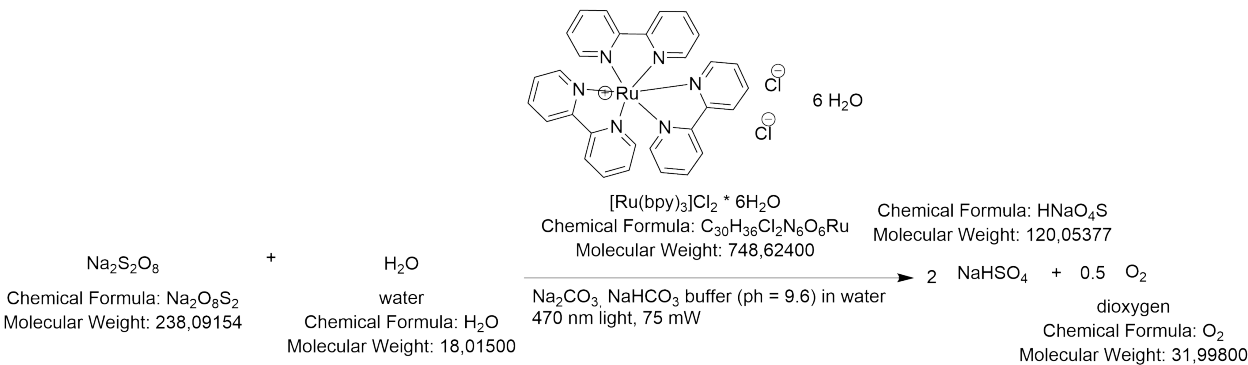
Date: 2024-08-06
Tags: Radiation | O2 | [Ru(bpy)3]Cl2*6 H2O | HTE | MRG
Status: Done
Created by: Michael Ringleb

Reaction scheme/sample structure

[Ru(bpy)$_3$]Cl$_2$ * 6H$_2$O
Chemical Formula: C$_{30}$H$_{36}$Cl$_2$N$_6$O$_6$Ru
Molecular Weight: 748,62400

Chemical Formula: HNaO$_4$S
Molecular Weight: 120,05377

Na$_2$S$_2$O$_8$ + H$_2$O → 2 NaHSO$_4$ + 0.5 O$_2$

Chemical Formula: Na$_2$O$_8$S$_2$
Molecular Weight: 238,09154

water
Chemical Formula: H$_2$O
Molecular Weight: 18,01500

Na$_2$CO$_3$, NaHCO$_3$ buffer (ph = 9.6) in water
470 nm light, 75 mW

dioxygen
Chemical Formula: O$_2$
Molecular Weight: 31,99800

Literature/reference experiments

Literature	https://doi.org/10.1021/acscatal.6b02595
Reproduction	/
Related experiment	see below AE-334: Preparation of stock solutions for the irradiation of [Ru(bpy)3]Cl2 * 6 H2O AE-JSC-321: Manufacturing and calibration of new 10 mL HTE with sensor spots I

Reagents

Screening of pH

Constant parameters (amounts added for each experiment)

Name	Abbreviation of solution	CAS Number / Experiment Number	Amount [mmol]	concentration used	Molar mass [g/mol]	Volume [mL]	concentration obtained

Buffer solution component 1	see varied parameters table below		see varied parameters table below	see varied parameters table below	84.006	see varied parameters table below	/
Buffer solution component 2	see varied parameters table below		see varied parameters table below	see varied parameters table below	105.988	see varied parameters table below	/
Sodium persulfate solution	Ox	7775-27-1	0.051	60 mM	238.09	0.85	6 mM
[Ru(bpy)3]Cl2 * 6 H2O solution	Ru	50525-27-4	0.085 µmol	40 µmol/L	748.62	0.213	10 µM
Milli-Q water		7732-18-5	/	/	18.015	see varied parameters table below	/

Varied parameters

*final volume of all reaction solutions is 8.5 mL

Experiment	pH value		Abbreviation	end concentration [M]	Volume [mL]	volume Milli-Q water [mL]
MRG-059-ZA-1-1	5.8	Acetic acid/ sodium acetate buffer	OAc	0.00835 + 0.0917	0.850	6.375
MRG-059-ZA-1-2	5.8	Acetic acid/sodium acetate buffer	OAc	0.00835 + 0.0917	0.850	6.375
MRG-059-ZA-1-3	5.8	Acetic acid/sodium acetate buffer	OAc	0.00835 + 0.0917	0.850	6.375
MRG-059-ZA-2-1	5.8	kalium hydrogen phosphate/ kalium dihydrogen phosphate buffer	KPO4-1	0.0942 + 0.00584	0.850	6.375

MRG-059-ZA-2-2	5.8	kalium hydrogen phosphate/ kalium dihydrogen phosphate buffer	KPO4-1	0.0942 + 0.00584	0.850	6.375
MRG-059-ZA-3-1	8.0	kalium hydrogen phosphate/ kalium dihydrogen phosphate buffer	KPO4-2	0.00652 + 0.0935	0.850	6.375
MRG-059-ZA-3-2	8.0	kalium hydrogen phosphate/ kalium dihydrogen phosphate buffer	KPO4-2	0.00652 + 0.0935	0.850	6.375
MRG-059-ZA-4-1	8.0	ammonia/ ammonium chloride buffer	NH3-1	0.0942 + 0.00575	0.850	6.375
MRG-059-ZA-4-2	8.0	ammonia/ ammonium chloride buffer	NH3-1	0.0942 + 0.00575	0.850	6.375
MRG-059-ZA-5-1	10.0	ammonia/ ammonium chloride buffer	NH3-2	0.0160 + 0.0861	0.850	6.375
MRG-059-ZA-5-2	10.0	ammonia/ ammonium chloride buffer	NH3-2	0.0160 + 0.0861	0.850	6.375
MRG-059-ZA-6-1	10.0	sodium bicarbonate	HCO3	0.070	0.661	6.100
	10.0	sodium hydroxide	OH	0.030	0.464	
MRG-059-ZA-6-2	10.0	sodium bicarbonate	HCO3	0.070	0.661	6.100
	10.0	sodium hydroxide	OH	0.030	0.464	
MRG-059-ZA-7-1	11.0	sodium bicarbonate	HCO3	0.0524	0.4949	5.994
	11.0	sodium hydroxide	OH	0.0476	0.7356	
MRG-059-ZA-7-2	11.0	sodium bicarbonate	HCO3	0.0524	0.4949	5.994
	11.0	sodium hydroxide	OH	0.0476	0.7356	

MRG-059-ZA-8-1	11.0	sodium hydrogen phosphate	NaPO4	0.0859	0.775	6.232
	11.0	sodium hydroxide	OH	0.0141	0.218	
MRG-059-ZA-8-2	11.0	sodium hydrogen phosphate	NaPO4	0.0859	0.775	6.232
	11.0	sodium hydroxide	OH	0.0141	0.218	
MRG-059-ZA-9-1	12.0	sodium hydrogen phosphate	NaPO4	0.0482	0.435	5.989
	12.0	sodium hydroxide	OH	0.0518	0.801	
MRG-059-ZA-9-2	12.0	sodium hydrogen phosphate	NaPO4	0.0482	0.435	5.989
	12.0	sodium hydroxide	OH	0.0518	0.801	

Irradiation Parameters

Power measured using [Power Meter] 843-R-USB + 919P-020-12 unless specified otherwise.

Oxygen sensor	Light Source Name	Wavelength [nm]	Power Setting [mW]	Analog input control voltage [V] using Equipment - Joy-it JT-RD6006 DC POWER SUPPLY
FireSting Fiber-Optic Oxygen Meter	Light Source - LCS-0470-50-22	470	75	0.18

Used beam combiner [Name or None]	none
Irradiation distance [cm]	9.5
Thermostat temperature [°C]	/
Stirring speed [rpm]	400
Start time irradiation [s]	see csv/json
End time irradiation [s]	see csv/json

Procedure/observations

Date	Time	Step	Observations
06.08.24		The Experiment AE-JSC-321: Manufacturing and calibration of new 10 mL HTE with sensor spots I was used The protocol for a fully automated workflow (Protocol - Operation of automated workflow for investigation of oxygen evolution) was utilized with a rare earth metal stir bar	used rare earth metal stir bar.jpg; canula position; utilized vial; position of reagent vials
	17:50-18:10	everything was set up according to the Protocol - Operation of automated workflow for investigation of oxygen evolution	
	18:10-18:17	The python script is loaded as described in Protocol - Operation of automated workflow for investigation of oxygen evolution and the "experiment.yml" is initialized with four experiments (see reagents table for volumes of reactants) with the "run"-parameter = "true" and one at the end of the queue with "run" = "false"	
	18:17	The python script is executed with "python run.py"	
	18:19	AutoSuite program was started	
		from this point on the execution was done fully automatic according to the table with steps executed by the automated platform in the Protocol - Operation of automated workflow for investigation of oxygen evolution	
	18:20	**MRG-059-ZA-1-1 was started (OAc placed on place of buffer_solution_1)**	septum was pierced 0 times at this point --> **rate = see comparison of rates table below**
	18:20-18:28	**priming of tubings**	
07.08.24	6:45		**realized that there was a problem in the code --> only one experiment performed before python code did crash because of problem in fitting code --> foto**
	6:45-7:30	**refilled water bottle, changed part of fitting code (see https://github.com/lamalab-org/photocat-hte/pull/39) --> see foto (code before change; code after changes) emptied vial and rinsed it with fresh water changed lid of vial**	

	08:00-08:25	**--> Alex prepared new solutions for OAc, Ox and Ru**	
	08:30-08:40	**--> put new solutions in robot (prepared by Alex Eith (with same concentrations as before))**	new solutions could be possible explanation for deviations between MRG-059-ZA-1-1 and 1-2/1-3 but weighing uncertainty below 1%
	08:41	**restart of experiments (restart of python code and AuitoSuite app)** **MRG-059-ZA-1-2 was started (OAc placed on place of buffer_solution_1)**	at this point the setpum in the vial lid was pierced 0 times --> **rate =see comparison of rates table below**
	08:41-08:49	**priming of tubings**	
	10:05	**MRG-059-ZA-1-3 was started (OAc placed on place of buffer_solution_1)**	at this point the setpum in the vial lid was pierced 9 times --> **rate =see comparison of rates table below**
	11:21	**MRG-059-Z-2-1 was started (KPO4-1 placed on place of buffer_solution_2)**	at this point the setpum in the vial lid was pierced 17 times --> **rate =see comparison of rates table below**
	12:36	**MRG-059-Z-2-2 was started (KPO4-1 placed on place of buffer_solution_2)**	at this point the setpum in the vial lid was pierced 27 times --> **rate =see comparison of rates table below**
	13:45	**end of MRG-059-ZA-2-2**	at this point the septum was pierced 36 times --> pictures of septum top, bottom
	13:45-13:53	**change of lid, replacement of buffer_solution_1 (OAc --> NH3-2), change of experiments in experiment.yml**	
	13:53	**MRG-059-ZA-5-1 was started (NH3-2 placed on place of buffer_solution_1)**	septum was pierced 0 times at this point --> **rate =see comparison of rates table below**
	14:09	**MRG-059-ZA-5-2 was started (NH3-2 placed on place of buffer_solution_1)**	at this point the setpum in the vial lid was pierced 9 times --> **rate =see comparison of rates table below**
	16:25	**end of MRG-059-ZA-5-2**	at this point the septum was pierced 18 times --> pictures of septum top, bottom
	16:25-16:34	**change of lid, replacement of buffer_solution_1 (NH3-2 --> KPO4-2), replacement of buffer_solution_2 (--> NH3-1), change of experiments in experiment.yml**	
	16:34	**MRG-059-ZA-3-1 was started (KPO4-2 placed on place of buffer_solution_1)**	septum was pierced 0 times at this point --> **rate =see comparison of rates table below**

	17:50	**MRG-059-ZA-3-2 was started (KPO4-2 placed on place of buffer_solution_1)**	at this point the setpum in the vial lid was pierced 9 times --> **rate =see comparison of rates table below**
	19:06	**MRG-059-Z-4-1 was started (NH3-1 placed on place of buffer_solution_2)**	at this point the setpum in the vial lid was pierced 17 times --> **rate =see comparison of rates table below**
	20:22	**MRG-059-Z-4-2 was started (NH3-1 placed on place of buffer_solution_2)**	at this point the setpum in the vial lid was pierced 27 times --> **rate =see comparison of rates table below**
	21:38	**end of MRG-059-ZA-4-2**	at this point the septum was pierced 36 times --> pictures of septum top, bottom
	21:38-21:47	**change of lid, refill of Ox, refill of Milli-Q-water, replacement of buffer_solution_1 (KPO4-2--> HCO3), replacement of buffer_solution_2 (NH3-1 --> OH), change of experiments in experiment.yml**	
	21:48	**MRG-059-ZA-6-1 was started (HCO3 placed on place of buffer_solution_1; OH placed on position of buffer_solution_2)**	septum was pierced 0 times at this point --> **rate =see comparison of rates table below**
	23:06	**MRG-059-ZA-6-2 was started (HCO3 placed on place of buffer_solution_1; OH placed on position of buffer_solution_2)**	at this point the setpum in the vial lid was pierced 9 times --> **rate =see comparison of rates table below**
08:08.24	0:24	**MRG-059-Z-7-1 was started (HCO3 placed on place of buffer_solution_1; OH placed on position of buffer_solution_2)**	at this point the setpum in the vial lid was pierced 17 times --> **rate =see comparison of rates table below**
	1:42	**MRG-059-Z-7-2 was started (HCO3 placed on place of buffer_solution_1; OH placed on position of buffer_solution_2)**	at this point the setpum in the vial lid was pierced 27 times --> **rate =see comparison of rates table below**
	3:00	**end of MRG-059-ZA-7-2**	at this point the septum was pierced 36 times --> pictures of septum top, bottom
	06:50-07:04	**change of lid, refill of Ox, replacement of buffer_solution_1 (HCO3 --> NaPO4), change of experiments in experiment.yml**	
	07:04	**MRG-059-ZA-8-1 was started (NaPO4 placed on place of buffer_solution_1; OH placed on position of buffer_solution_2)**	septum was pierced 0 times at this point --> **rate =see comparison of rates table below**

08:22	**MRG-059-ZA-8-2 was started (NaPO4 placed on place of buffer_solution_1; OH placed on position of buffer_solution_2)**	at this point the setpum in the vial lid was pierced 9 times --> **rate =see comparison of rates table below**
09:40	**MRG-059-Z-9-1 was started (NaPO4 placed on place of buffer_solution_1; OH placed on position of buffer_solution_2)**	at this point the setpum in the vial lid was pierced 17 times --> **rate =see comparison of rates table below**
10:58	**MRG-059-Z-9-2 was started (NaPO4 placed on place of buffer_solution_1; OH placed on position of buffer_solution_2)**	at this point the setpum in the vial lid was pierced 27 times --> **rate =see comparison of rates table below**
12:16	**end of MRG-059-ZA-9-2**	at this point the septum was pierced 36 times --> pictures of septum top, bottom

Analysis

Quantitative Interpretation

Comparison of rates

experiment determiner	pH value	utilized buffer	rate constant (utilizing Jacobs fit)	more information
MRG-059-ZA-1-1	5.8	acetate buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)
MRG-059-ZA-1-2	5.8	acetate buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)
MRG-059-ZA-1-3	5.8	acetate buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)
MRG-059-ZA-2-1	5.8	potassium phosphate buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)

MRG-059-ZA-2-2	5.8	potassium phosphate buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)
MRG-059-ZA-3-1	8.0	potassium phosphate buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)
MRG-059-ZA-3-2	8.0	potassium phosphate buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)
MRG-059-ZA-4-1	8.0	ammonia/ammonium chloride buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)
MRG-059-ZA-4-2	8.0	ammonia/ammonium chloride buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)
MRG-059-ZA-5-1	10.0	ammonia/ammonium chloride buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)
MRG-059-ZA-5-2	10.0	ammonia/ammonium chloride buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)
MRG-059-ZA-6-1	10.0	bicarbonate/hydroxy buffer	0.01845	lid was changed beforehand
MRG-059-ZA-6-2	10.0	bicarbonate/hydroxy buffer	0.01897	septum was pierced 9 times beforehand
MRG-059-ZA-7-1	11.0	bicarbonate/hydroxy buffer	0.02034	septum was pierced 18 times beforehand
MRG-059-ZA-7-2	11.0	bicarbonate/hydroxy buffer	0.02028	septum was pierced 27 times beforehand
MRG-059-ZA-8-1	11.0	sodium phosphate/hydroxy buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)
MRG-059-ZA-8-2	11.0	sodium phosphate/hydroxy buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)

MRG-059-ZA-9-1	12.0	sodium phosphate/hydroxy buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)
MRG-059-ZA-9-2	12.0	sodium phosphate/hydroxy buffer	NA	for this system no rate was delivered (looks like there was no oxygen evolution at all)

Comparison of [O2]

experiment determiner	pH	utilized buffer	rate constant (from implemented ODE fit from Jacob)	[O2] degassing	[O2] pre-reaction baseline	[O2] reaction	Δ [O2] with underlying oxygen "penetration" through septum	[O2] post reaction baseline	more information
				[μmol/L]	[μmol/L]	[μmol/L]	[μmol/L]	[μmol/L]	
MRG-059-ZA-1-1	5.8	acetate buffer	NA	154 --> 1.5	1.5 --> 39.5	39.5 --> 35 (ca. 1 minute) --> 47 (ca. 9 min)	NA	47 -->76.6	lid change beforehand
MRG-059-ZA-1-2	5.8	acetate buffer	NA	147 --> 1.3	1.3 --> 7.3	7.3 --> 0.5 (ca. 1 min) --> fluctuation around 0.3 - 0.5 (ca. 9 min)	NA	0.3 --> 7.7	lid change beforehand
MRG-059-ZA-1-3	5.8	acetate buffer	NA	244 --> 1.8	1.8 --> 7.2	7.2 --> 0.5 --> fluctuation around 0.3 - 0.5 (ca. 9 min)	NA	0.3 --> 7.6	septum pierced 9 times beforehand
MRG-059-ZA-2-1	5.8	potassium phosphate buffer	NA	241 --> 1.8	1.8 --> 8.3	8.3 --> 2.5 (ca. 2 min) --> 9 (ca. 8 min)	NA	9 --> 15	septum pierced 18 times beforehand
MRG-059-ZA-2-2	5.8	potassium phosphate buffer	NA	242 --> 1.8	1.8 --> 8.3	8.3 -> 3 (ca. 2 min) --> 9.2	NA	9.2 --> 15.2	septum pierced 27 times beforehand

MRG-059-ZA-3-1	8.0	potassium phosphate buffer	NA	243 --> 1.1	1.1 --> 2.7	2.7 --> 0.1 (ca. 1.5 min) --> 0.9 (ca. 8.5 min)	NA	0.9 --> 1.8	lid change beforehand
MRG-059-ZA-3-2	8.0	potassium phosphate buffer	NA	221 --> 0.8	0.8 --> 2.4	2.4 --> 0.1 (ca. 1.5 min) --> 0.8 (ca. 8.5 min)	NA	0.8 --> 1.6	septum pierced 9 times beforehand
MRG-059-ZA-4-1	8.0	ammonia/ammonium chloride buffer	NA	213 --> 0.5	0.5 --> 0.5	0.5 --> 0 (ca. 10 s) --> 0.3 (ca. 10 min)	NA	0.3 --> 3	septum pierced 18 times beforehand
MRG-059-ZA-4-2	8.0	ammonia/ammonium chloride buffer	NA	214 --> 0.6	0.6 --> 0.5	0.5 --> 0 (ca. 20 s) --> 0.3 (ca. 10 min)	NA	0.3 --> 3	septum pierced 27 times beforehand
MRG-059-ZA-5-1	10.0	ammonia/ammonium chloride buffer	NA	245 --> 0.7	0.7 --> 3.1	3.1 --> 0 (ca. 0.5 min) -->0.4 (ca. 9.5 min)	NA	0.4 --> 5.2	lid change beforehand
MRG-059-ZA-5-2	10.0	ammonia/ammonium chloride buffer	NA	242 --> 0.7	0.7 --> 3.0	3.0 --> 0 (ca. 0.5 min) --> 0.4 (ca. 9.5 min)	NA	0.4 --> 4.9	septum pierced 9 times beforehand
MRG-059-ZA-6-1	10.0	bicarbonate/hydroxy buffer	0.01845	224 --> 1.4	1.4 --> 22.7	22.7 --> 111 (ca. 2.5 min) --> 129 (ca. 4.25 min) --> fluctuation between 129/130 (ca. 3.25 min)	ca. 90	131 --> 134	lid change beforehand
MRG-059-ZA-6-2	10.0	bicarbonate/hydroxy buffer	0.01897	232 --> 1.8	1.8 --> 3.7	3.7 --> 94 (ca. 3.5 min) --> fluctuation between 93/94 (ca. 1.5 min) --> 82 (ca. 5 min)	ca. 90	82 --> 67	septum pierced 9 times beforehand
MRG-059-ZA-7-1	10.0	bicarbonate/hydroxy buffer	0.02034	218 --> 3	3 --> 4.4	4.4 --> 75 (ca. 2.5 min) --> fluctuation between 74 - 77(ca. 3 min) --> 68.5 (ca. 4.5 min)	ca. 70	68.5 --> 72.8	septum pierced 18 times beforehand

MRG-059-ZA-7-2	10.0	bicarbonate/hydroxy buffer	0.02028	228 --> 2.9	2.9 --> 4.2	4.2 --> 75 (ca. 2.75 min) --> fluctuation between 74 -76 (ca. 2.5 min) --> 65 (ca. 4.75 min)	ca. 70	65 --> 61.2	septum pierced 27 times beforehand
MRG-059-ZA-8-1	11.0	sodium phosphate/hydroxy buffer	NA	239 --> 1.7	1.7 --> 5.7	5.7 --> 0.8 (ca. 1.25 min) --> 5.8 (ca. 8.75 min)	NA	5.8 --> 9.6	lid change beforehand
MRG-059-ZA-8-2	11.0	sodium phosphate/hydroxy buffer	NA	228 --> 2.4	2.4 --> 6.1	6.1 --> 0.9 (ca. 1.25 min) --> 8.6 (ca. 8.75 min)	NA	8.6 --> 17.4	septum pierced 9 times beforehand
MRG-059-ZA-9-1	11.0	sodium phosphate/hydroxy buffer	NA	225 --> 3.4	3.4 --> 6.5	6.5 --> 0.8 (ca. 1 min) --> 6.7 (ca. 9 min)	NA	6.7 --> 11.1	septum pierced 18 times beforehand
MRG-059-ZA-9-2	11.0	sodium phosphate/hydroxy buffer	NA	222 --> 5.1	5.1 --> 7.3	7.3 --> 0.9 (ca. 1.25 min) --> 9.1 (ca. 8.75 min)	NA	9.1 --> 20.6	septum pierced 27 times beforehand

Conclusions:

- for ZA-1 to ZA-5 and ZA-8,9 no oxygen evolution visible --> potentially no reaction due to low pH or also buffer species
- for ZA-6 to ZA-7 reaction visible --> reaction rates fit to expectations
- duplicates fit well to each other for same experiment (from comparison of [O2] and reaction rate (were applicable))

- pH 11 seems to be the best pH value for the oxygen production under these circumstances

Linked experiments

- AE-262: Irradiation of PhPDA (AE-257), 1.5 mg/mg SDS, 2 mg/mL PhPDA after 3 d

- AE-265: Preparation of stock solutions for the irradiation of [Ru(bpy)3]Cl2 * 6 H2O

- AE-266: Calibration of oxygen and temperature sensor spots in the 10 mL HTE vial

- AE-267: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O

- AE-271: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, with manual light control

- AE-272: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, with manual light control I

- MRG-059-A: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, using a rare earth metal stir bar, fully automated peripherals

- MRG-059-B: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, using a rare earth metal stir bar, fully automated peripherals II

- MRG-059-C: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, using a rare earth metal stir bar, fully automated peripherals III

- MRG-059-D: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, using a rare earth metal stir bar, fully automated peripherals IV

- MRG-059-E: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, using a rare earth metal stir bar, fully automated peripherals V

- MRG-059-F: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, using a rare earth metal stir bar, fully automated peripherals VI

- MRG-059-Q: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, using a rare earth metal stir bar, fully automated peripherals - 4th try I

- MRG-059-R: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, using a rare earth metal stir bar, fully automated peripherals - 4th try II

- MRG-059-S: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, using a rare earth metal stir bar, fully automated peripherals - 4th try III

- MRG-059-T: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, using a rare earth metal stir bar, fully automated peripherals - 4th try IV

- MRG-059-U: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, using a rare earth metal stir bar, fully automated peripherals - 4th try V

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13 / 24

- AE-JSC-321: Manufacturing and calibration of new 10 mL HTE with sensor spots I

- AE-323: Preparation of stock solutions for the irradiation of [Ru(bpy)3]Cl2 * 6 H2O

- MRG-059-Z: Irradiation of [Ru(bpy)3]Cl2 * 6 H2O in the ChemSpeed robot, fully automated peripherals
- 1st screening of pH (9.2 - 10.4)

- AE-334: Preparation of stock solutions for the irradiation of [Ru(bpy)3]Cl2 * 6 H2O

Linked items

Equipment - Irradiation Set-Up

Equipment - Joy-it JT-RD6006 DC POWER SUPPLY

Light Source - UHP LED 470 nm

Protocol - Operation of automated workflow for investigation of oxygen evolution - as of 03.07.2024

Attached files

results_MRG-059-ZA-9-2.png
sha256: 5aa563cf0dd7811e2cadb2890636ee080ed279a7d0a7aee597573e5e3978019d

results_MRG-059-ZA-9-2.json
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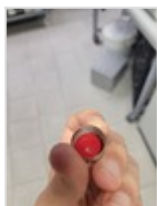
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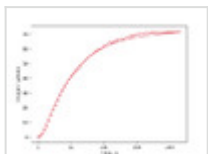

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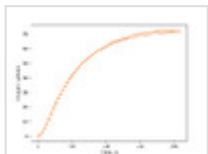
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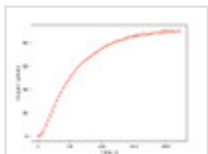

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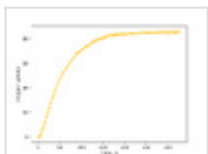

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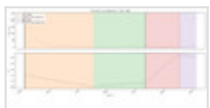
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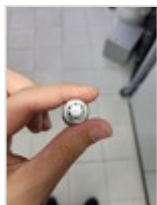sha256: 04fed10a68242ecae537b11ee4684586dcdeb73a086dc2a944c49948f84a64da

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Comment

On Jacob Schneidewind wrote:
Notes:
* csv for MRG-059-ZA-1-2 is missing, json for MRG-059-ZA-1-2 and MRG-059-ZA-1-1 is missing

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Link: https://elab.water-splitting.org/experiments.php?mode=view&id=1268

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