

AE-KRA-512: UV/Vis of [Ru(CO)(OH)₂(PNP)] in H₂O

Date: 2025-07-24

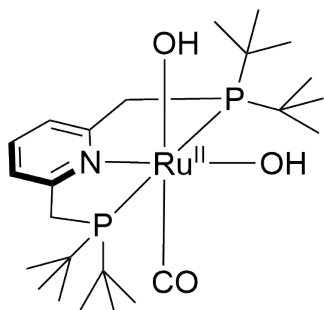
Tags: PNP P(tBu)N(py)P(tBu)
[Ru(CO)(OH)₂(PNP)] AE UV/Vis KRA

Category: Two-photon

Status: Done

Created by: Alexander Eith

Reaction scheme/sample structure



Chemical Formula: C₂₄H₄₅NO₃P₂Ru

Molecular Weight: 558,64552

ChemDraw File (linked): [AE-493.cdxml](#)

Literature/reference experiments

Literature	/
Reproduction	/
Similar experiments	Two-photon - AE-441: Determination of absorption coefficient of [Ru(CO)(OH)₂(PNP)] with UV/Vis

Reagents

Name	CAS Number / Experiment Number	Inventory number	Amount [mmol]	Equivalents	Mass _{theo} [mg]	Mass _{exp} [mg]	Molar mass [g/mol]	Density (g/ml)	Volume [ml]
[Ru(CO)(OH) ₂ (PNP)] (concentrated solution in H ₂ O)	Two-photon - AE-499: Stocksolution of [Ru(CO)(OH)₂(PNP{tBu})] in water	/	/	/	/	/	558.65	/	0.5
H ₂ O	/	/	/	/	/	/	/	/	approx. 5

Procedure/observations

The flask containing the [Ru] stock solutions was handled using [Protocol - Schlenk Technique](#) und was also kept in the dark

The measurments were done by KRA, sample preparation was done by AE

Date	Time	Step	Observations	Pictures
23.07	9:45	0.5 mL of [Ru] were transferred into a 2 mL screw cap vial using a 1 mL syringe	/	stock solution.jpg
	10:07	[Ru] (0.2 mL) was added to a quartz cuvette using a 1 mL eppendorf pipette	/	/
		To that water (1.8 mL) was added using a 1 mL eppendorf pipette	/	/
		The cuvette was shaken gently	/	/
	10:15	The UV/Vis was measured according to Protocol - UV/vis measurements using Avantes spectrometer, Lab E208, CEEC I	AE-512-UVVis_1	AE-512-UVVis_1.jpg
	10:20	To the cuvette water (0.2 mL) was added using a 1 mL eppendorf pipette	/	/
		The cuvette was shaken gently	/	/
	10:21	The UV/Vis was measured according to Protocol - UV/vis measurements using Avantes spectrometer, Lab E208, CEEC I	AE-512-UVVis_2	AE-512-UVVis_2.jpg
	10:42	The UV/Vis was measured according to Protocol - UV/vis measurements using Avantes spectrometer, Lab E208, CEEC I using 100 instead of 1000 scans	AE-512-UVVis_3	/

Analysis

Date	Time	Sample name	Analysis method	Analytical device	Solvent	Raw Data	Processed Data	Comparative Data	Interpretation
23.07	10:15	AE-512-UVVis_1	UV/Vis	Equipment - Avantes UV/vis spectrophotometer	H2O	AE-512-UVVis_1_7420287SP.TXT AE-512-UVVis_1.ABS8	AE-512-UVVis_1.png	Two-photon - AE-441: Determination of absorption coefficient of [Ru(CO)(OH)2(PNP)] with UV/Vis	As expected, bit to high absorbance
23.07	10:21	AE-512-UVVis_2	UV/Vis	Equipment - Avantes UV/vis spectrophotometer	H2O	AE-512-UVVis_2_7420287SP.TXT AE-512-UVVis_2.ABS8	AE-512-UVVis_2.png	Two-photon - AE-441: Determination of absorption coefficient of [Ru(CO)(OH)2(PNP)] with UV/Vis	As expected, better signal to noise
23.07	10:42	AE-512-UVVis_3	UV/Vis	Equipment - Avantes UV/vis spectrophotometer	H2O	AE-512-UVVis_3_7420287SP.TXT AE-512-UVVis_3.ABS8	error in plotting	Two-photon - AE-441: Determination of absorption coefficient of [Ru(CO)(OH)2(PNP)] with UV/Vis	

Results

Better signal to noise quality

Linked experiments

- [AE-KRA-204: Synthesis of \[Ru\(CO\)\(OH\)₂\(PNPtBu\)\] using Ag₂O, 5 h](#)

Prep work - [AE-501: Degassing of MeCN \(MS grade\)](#)

Two-photon - [AE-382: Synthesis of \[Ru\(CO\)\(OH\)₂\(PNPtBu\)\] using Ag₂O, 5 h](#)

Two-photon - [AE-441: Determination of absorption coefficient of \[Ru\(CO\)\(OH\)₂\(PNP\)\] with UV/Vis](#)

Two-photon - [AE-456: Synthesis of \[Ru\(CO\)\(OH\)₂\(PNPtBu\)\] using Ag₂O, 5 h](#)

Two-photon - [AE-460: Synthesis of ¹⁷O labeled \[Ru\(CO\)\(OH\)₂\(PNPtBu\)\]](#)

Two-photon - [AE-499: Stocksolution of \[Ru\(CO\)\(OH\)₂\(PNP{tBu}\)\] in water](#)

Two-photon - [AE-506: ESI-MS of \[Ru\(CO\)\(OH\)₂\(PNP\)\] \(AE-456-1\) and ¹⁷O labeled \[Ru\] \(AE-460-2\)](#)

Linked resources

Equipment - [Freezer Lab E004 CEEC II](#)

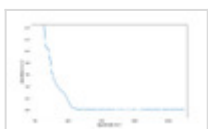
Protocol - [Schlenk Technique](#)

Protocol - [UV/vis measurements using Avantes spectrometer, Lab E208, CEEC I](#)

Attached files

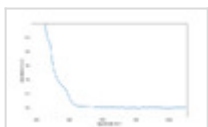
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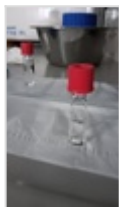


script_UVVis_oneplot.py

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stock-solution.jpg

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Unique eLabID: 20250724-3544b34e54695b42e27b000fd3ad39ef9e189819
Link: <https://elab.water-splitting.org/experiments.php?mode=view&id=2503>