EA-MEJ-357: Preparation of RhCl3 and Cr(NO3)3 stock solutions

Date: 2025-10-09
Tags: Stocksolution MEJ EA RhCl3*3H2O Cr(NO3)3*9H2O Solution
Category: Prep work
Status: Done
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Objective

Preparation of stock solutions of $RhCl_3$ and $Cr(NO_3)_3$ salts.

Reaction scheme/sample structure

ChemDraw File (linked): EA-357.cdx

Literature/reference experiments

Literature	https://doi.org/10.1039/C9EE00310J
Reproduction	/
Similar experiments	Prep work - NB-275: Preparation of RhCl3 and Cr(NO3)3 solutions I

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]	Concentration [mM]
$RhCl_3.3H_2O$, BLD Pharmatech GmbH	13569-65-8	C138335	/	/	12.8	13	263.31	/	/	9.874
$Cr(NO_3)_3.9H_2O$	7789-02-8	/	/	/	57.62	57.64	400.15	/	/	28.809
milli-Q water	/	/	/	/	/	/	/	/	for solution preparation (up to final volumes of 5 ml)	/

Procedure/observations

Date	Time	Step	Observations	Pictures
08.10.2025	16:30	Weighing $RhCl_3.3H_2O$ inside the glovebox, transfer it to a 10 ml vial. Named: **EA-357-$RhCl_3$**	Dark red crystals **EA-357-$RhCl_3$**	20251008_1630-RhCl3 and Cr(NO3)3 salts before addition of water.jpg
	16:30	Weighing $Cr(NO_3)_3.9H_2O$ in a 10 ml vial. Named: **EA-357-$Cr(NO_3)_3$**	Dark blue crystals **EA-357-$Cr(NO_3)_3$**	20251008_1630-RhCl3 and Cr(NO3)3 salts before addition of water.jpg
	16:34	2ml of milli-Q water was added to the **EA-357-$RhCl_3$** vial of $RhCl_3*3H_2O$ using Eppendorf pipette 100-1000 µl.	Red solution	20251008_1634-RhCl3 and Cr(NO3)3 salts after addition of water.jpg
	16:34	2ml of milli-Q water was added to the **EA-357-$Cr(NO_3)_3$** vial of $Cr(NO_3)_3.9H_2O$ using Eppendorf pipette 100-1000 µl.	Blue solution	20251008_1634-RhCl3 and Cr(NO3)3 salts after addition of water.jpg
	16:43	Solution of the **EA-357-$RhCl_3$** vial was transferred into a 15ml falcon tube using an Eppendorf pipette. 1ml of milli-Q water was added to the empty vial and swirled for quantitative transfer of the solution.	Red solution	20251008_1643-solutions in the falcon tubes.jpg
	16:43	Solution of the **EA-357Cr(NO_3)$_3$** vial was transferred into a 15ml falcon tube using an Eppendorf pipette. 1ml of milli-Q water was added to the empty vial and swirled for quantitative transfer of the solution.	Blue solution	20251008_1643-solutions in the falcon tubes.jpg
	18:50	The tube was filled with water till 5 ml and covered with Al foil. Named: **EA-357-9.874 mM $RhCl_3$ 08.10.2025**	Red solution **EA-357-9.874 mM $RhCl_3$ 08.10.2025**	20251008_1850-EA-357-Rh & Cr stock solutions.jpg
	18:50	The tube was filled with water till 5 ml and covered with Al foil. Named: **EA-357-28.809 mM $Cr(NO_3)_3$ 08.10.2025**	Blue solution **EA-357-28.809 mM $Cr(NO_3)_3$ 08.10.2025**	20251008_1850-EA-357-Rh & Cr stock solutions.jpg

Product characterization

Sample	Concentration mM	Mass [mg]	Purity	Volume, mL	Amount [µmol]	Yield [%]	Description	Image	Storage location
EA-357-9.874 mM $RhCl_3$ 08.10.2025	9.874	/	/	5	/	/	Red solution	20251008_1850-EA-357-Rh & Cr stock solutions.jpg	CEEC II, E004, EA fume hood
EA-357-28.809 mM $Cr(NO_3)_3$ 08.10.2025	28.809	/	/	5	/	/	Blue solution	20251008_1850-EA-357-Rh & Cr stock solutions.jpg	CEEC II, E004, EA fume hood

Results

Stock solution of $RhCl_3$ and $Cr(NO_3)_3$ salts were prepared with volume of 5ml and concentration of **9.874 mM** and **28.809 mM** respectively.

Attached files

EA-357.cdx
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EA-357.png
sha256: e167c1a6cf057e97721fcaa9eaa4a6bc621a7aa4077a49d11857839081db91f3

20251008_1643-solutions in the falcon tubes.jpg
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20251008_1850-EA-357-Rh & Cr stock solutions.jpg
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20251008_1634-RhCl3 and Cr(NO3)3 salts after addition of water.jpg
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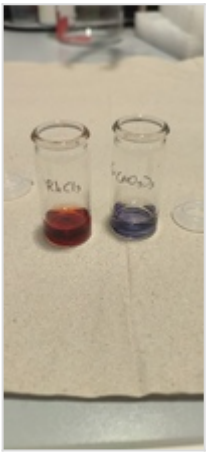

20251008_1630-RhCl3 and Cr(NO3)3 salts before addition of water.jpg
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Unique eLabID: 20251009-79229c2bbb2fbc35d238bec1d72a030cd7a3e20c
Link: https://elab.water-splitting.org/experiments.php?mode=view&id=3155