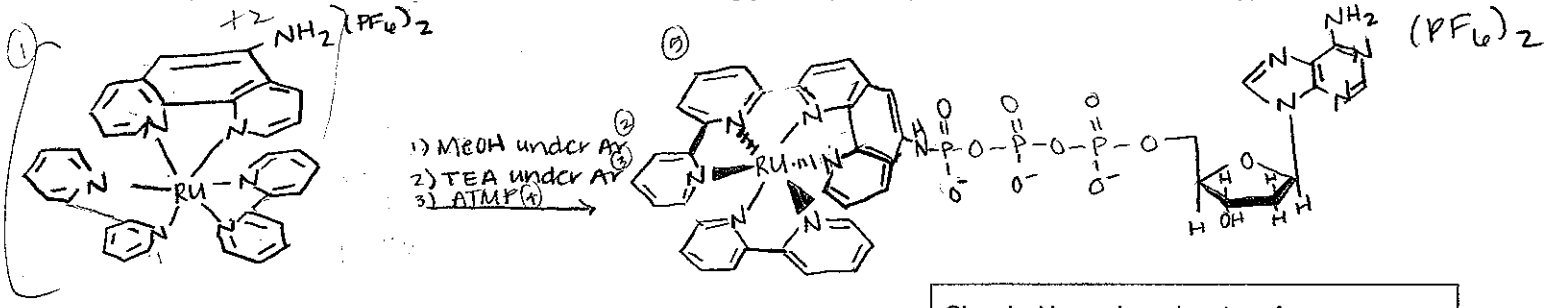
Reaction Risk Assessment Form.

Reaction number: ATP002DP

Write your reaction here including work-up and purification method (*e.g.* chromatography). Use the form below to risk assess ALL associated reaction and process conditions (*e.g.* heating, cooling, vacuum), particular hazards (*e.g.*, exotherm, gas evolution, flooding, asphyxiation, burns - hot or cold, explosion), quench procedures, and waste disposal as well as the chemicals to be used, including your expected product, solvents, and known byproducts.



Compound	FW	d	Quantity	mmols	equiv	Route of exposure: 1 Inhalation; 2. Skin/eye contact; 3 Swallowing	Carcinogen, teratogen, mutagen	Very toxic / toxic	Harmful/irritant	Explosive	Pyrophoric	Highly flammable, flammable	Oxidising	Corrosive	Lachrymator	Other (specify):
(1) $[Ru(bpy)_2(phen\text{-}NH_2)](PF_6)_2$	897.04	—	0.21649	0.24	5	1,2,3	—	ND	1	—	1	—	—	—	—	1
						1,2,3	—	2	1	—	—	3	—	1	—	—
(2) MeOH	32.04	0.792	10 mL	247												
(3) TEA	149.19	1.12	0.25mL	1.88		1,2,3	3	2	1	1	—	1	—	2	—	—
(4) ATMP	489.17	—	~0.0236g	0.048	1	1,2,3	—	3	—	—	—	—	—	—	—	—
(6) * toxicity based on tris(2,2'-bipyridine) ruthenium(II) chloride	1388.86	—	~0.067g	0.048	1	1,2,3	—	ND	1	—	—	—	—	—	—	—

Chemical hazards and routes of exposure

Repeat experiment (this book only - please circle one) (No) / Yes (previous assessment on page:)

New experiment (Please tick one): Category: (A) B C D

Standard protocol followed? (Please give reference) Chem Com Kvaatz (2008) pg502-504 supplementary info

Reaction conditions and associated processes (heat, cooling, pressure, vacuum *etc*) and hazards:
(Refer to general risk assessments on Departmental safety website)

Control Measures: (please tick boxes)				
	Safety glasses: ✓	Lab coat: ✓	Fume hood: ✓	Safety screen:
	Gloves (type):	Nitrile: ✓	Marigolds:	Other:
	Scrubbing train (type):		Other:	

Are specific emergency procedures necessary for this process: Yes/No. If Yes, give details:

Reaction and/or reagent quench:
(Give quench type and possible hazard)

Waste disposal: Chlorinated Waste Hydrocarbon Waste Silica Waste Other (specify): Aqueous
(circle as appropriate)

Co-worker signature: Designated Supervisor Signature:

Date: Date:

RISK ASSESSMENT TOOL for LABORATORY PROCEDURES

PROCEDURE IDENTIFICATION:
List chemicals used. Attach MSDS and any written procedures.

Chemical Volume(s)	Micro < 0.5 L		0.5	Normal	2 L	Large > 2 L			
	(1)		2	3	4	5			
Hazard Recognition	None			Routine		Extreme			
USE HIGHEST SCORE ONLY									
Flammable	0		1	2	(3)	4	5		
Corrosive	0		1	(2)	3	4	5		
Toxic	0		1	2	(3)	4	5		
Cryogenic	0		1	2	3	4	5		
Process Conditions N/A	Sub-ambient (P < 1 atm; T < 10°C		Ambient (P = 1 atm; T > 10 & < 40°C)			Extreme			
0	3		(1)	2		3	5		
Explosive Hazard	No		Yes						
0	(0)		5						
Radiation Hazard	Minimal			Normal		High			
(0)	1	2	3		4	5			
Other Hazard: Specify & Score	Minimal			Normal		High			
0	1	2	3		4	5			
Special Hazards:	Inhalation Toxicity 0	(2)	5	Reactive		(0)	5		
Procedure	Detailed & Written		Routine			Under Development			
	(0)		1	2	3 4	5			
Personnel Preparedness & Training	Fully Trained & Prepared		Routine			Untrained			
	0		(2)		4	5			
Ventilation Needed	Hood Used		General Lab Only			Not Used			
	(0)		3		4	5			
Shielding Needed	Used					Not Used			
	(0)					5			
Equipment Maintenance	Regularly Performed & Documented					Never Performed			
	(0)		1	2	3 4	5			

Initial Score: 19

RECOMMENDED ACTIONS BASED ON SCORE		
LOW	< 15	Procedure can be performed with routine precautions.
MODERATE	15 - 25	Procedure can be performed with attention given to specific hazards. Supervision is recommended.
HIGH	26 - 30	Procedure may be performed if necessary. High level attention must be given to all hazards. High level, continuous supervision is mandatory.
EXTREME	> 30	Procedure must be revised to lower the risk.

If score is > 25, risk reduction actions should be identified and implemented.

INSTRUCTIONS

Complete the LABRAT as part of the the procedure review. Scoring is based on a 0 - 5 scale, with 0 being "NOT APPLICABLE" and 5 being "Extreme" Your can assign any score to a specific box applicable, even if the score vale is not shown on the RAT. After scoring, interpret the score using the guidelines in the top of the right column. The IC can increase or decrease the assessment, based on the situation.

List Chemicals Used

Chemical	Volume or Weight