Title: Neptunium and Uranium Reduction Chemistry-A

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Gaunt, Andrew James

Intended for: Report

Issued: 2020-03-18

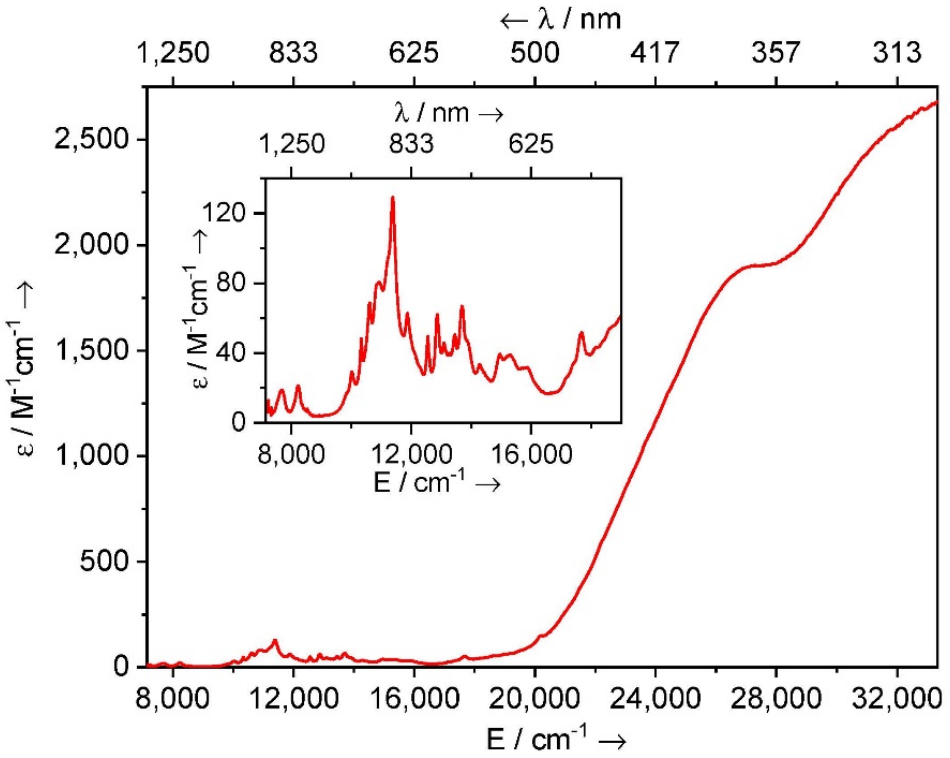
Neptunium and Uranium Reduction Chemistry-A

Selena Staun 332373

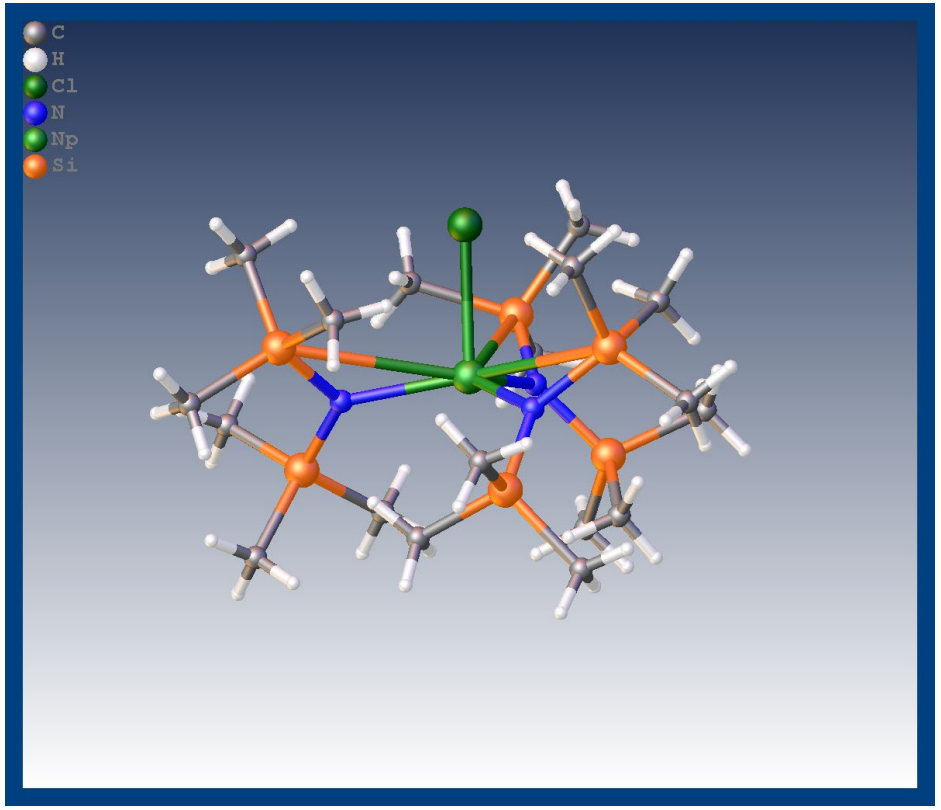
Andrew Gaunt 185633

Material to share with mentor back at UCSB

Np(IV)ClN*$_3$: characterization



UV-vis

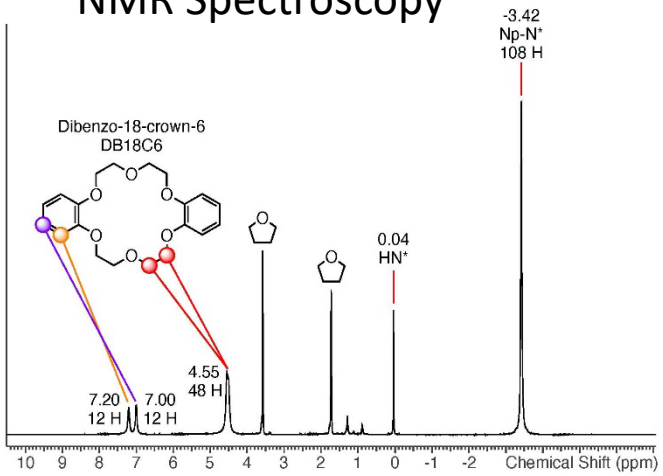


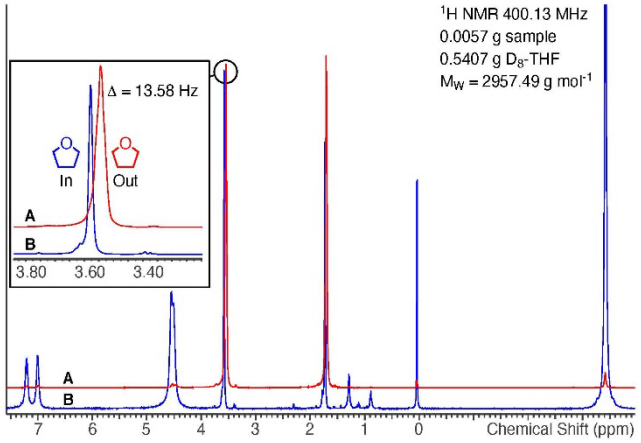
Solid-state molecular structure

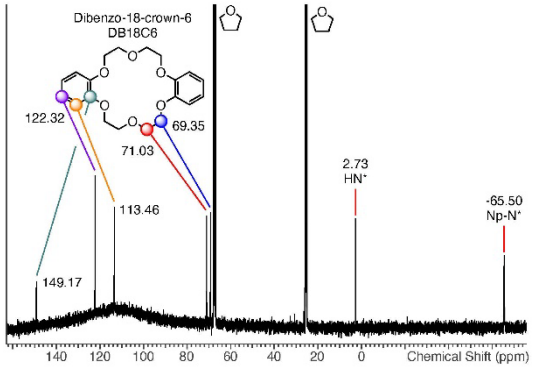
NMR Spectroscopy: similar to previous neptunium complexes

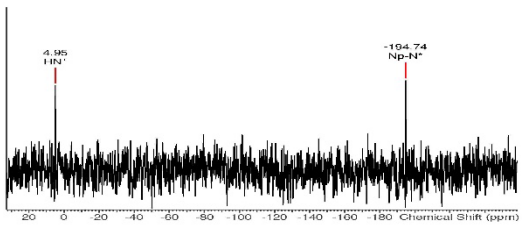
Np(III)ClN*$_3$[(KDB18-c-6)$_3$Cl]: characterization

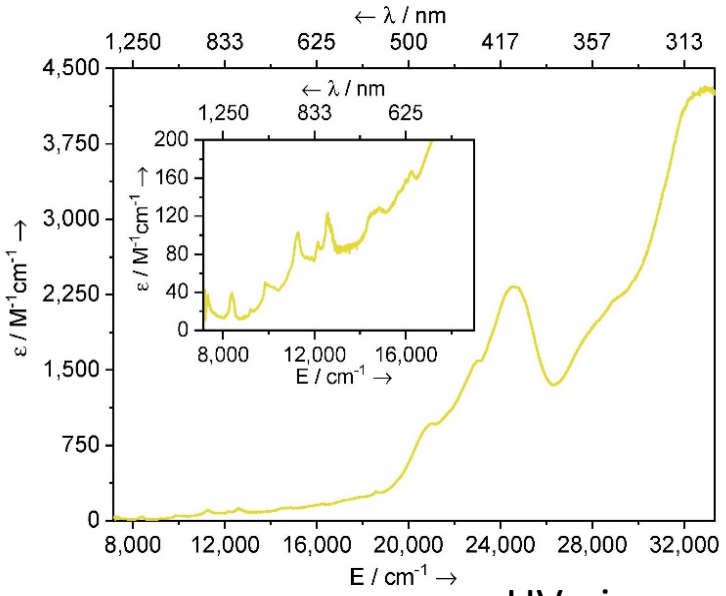
NMR Spectroscopy



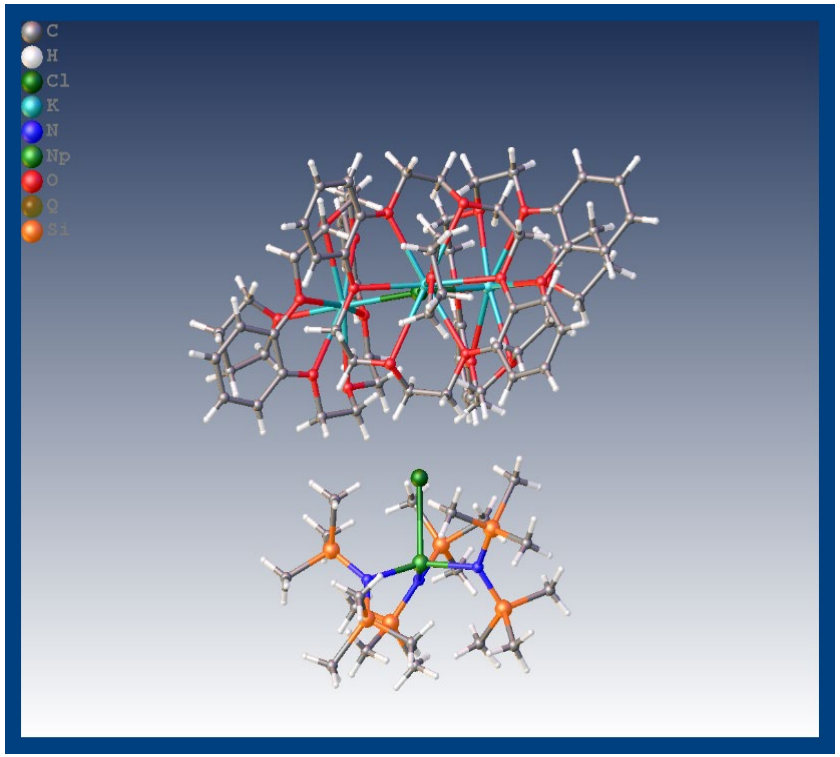






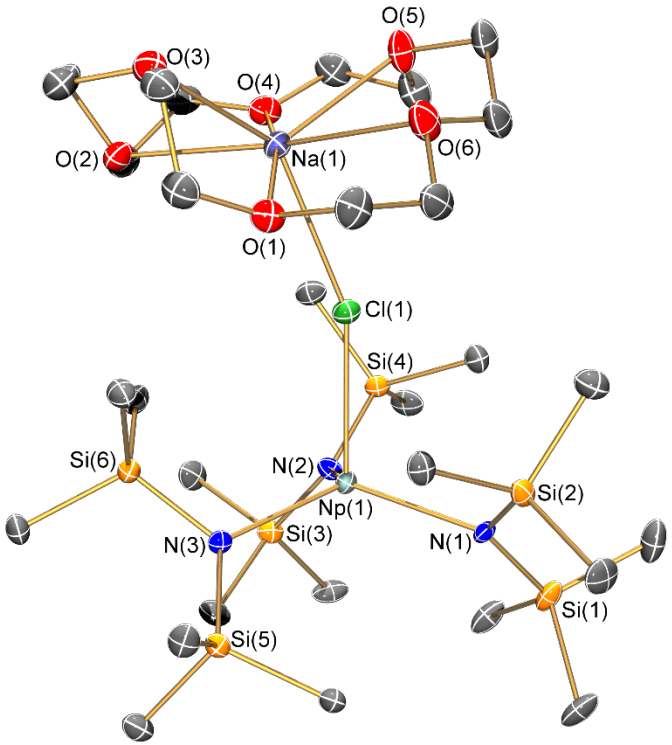


UV-vis



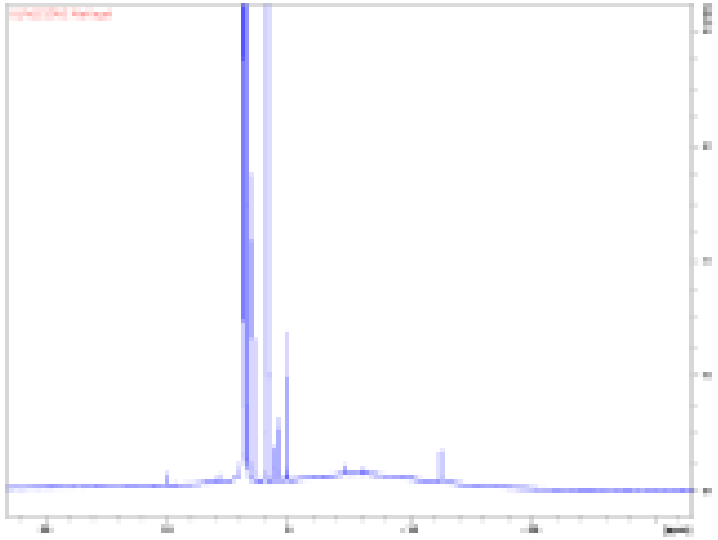
Solid-state molecular structure

Np(III)(N*$_3$Cl)(Na(crown)): characterization

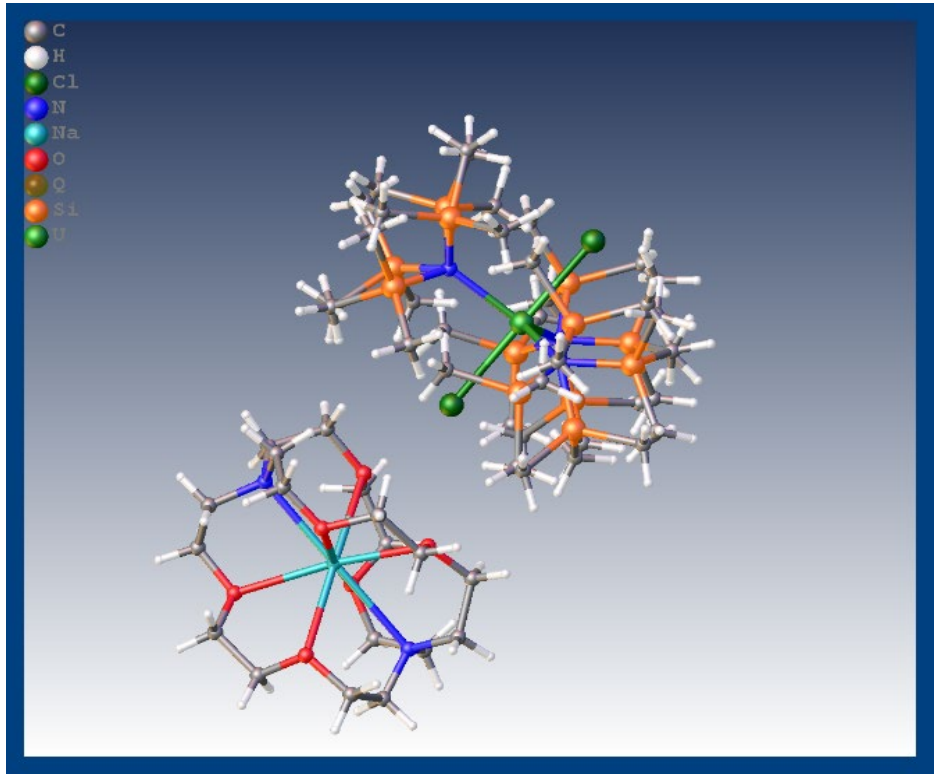


Solid-state molecular structure

$U(Cl)_2N^*_3$(Nacrypt): characterization



NMR Spectroscopy



Solid-state molecular structure

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Selena Staun
Institution:	Los Alamos National Lab
Lab Group:	Aaron Tondreau
Results email:	SStaun@lanl.gov

SLS-91

SAMPLE IDENTIFICATION

Invoice email:	cmbarela@lanl.gov
Invoice Address:	
PO#	

Analysis	Theory	% Found		
C	36.35%			
H	7.63%			
N	5.89%			

Single ☐ Duplicate ☒ Triplicate ☐

Molecular Formula:	$C_{36}H_{68}Cl_2N_3NaO_6Si_6U$
M.P. / B.P.	
Air Sensitive:	Yes ☒ No ☐
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☒ No ☐
Drying: Yes ☐ No ☒	Temp. °C Time H M
Sample Return: Yes ☐ No ☒	Shipping Address:

Comments: Air Sensitive and depleted Uranium Sample

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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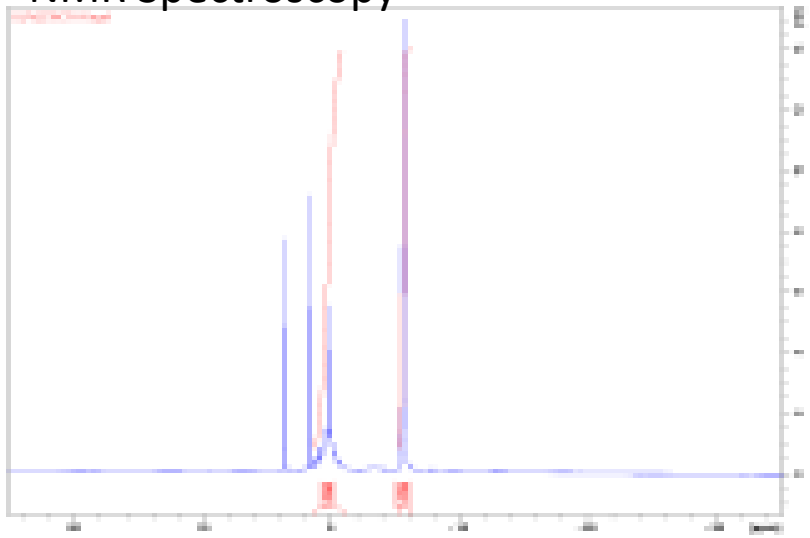
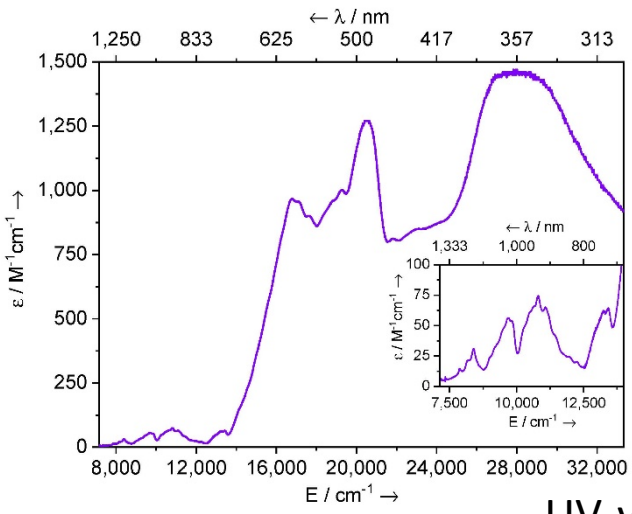
Elemental Analysis

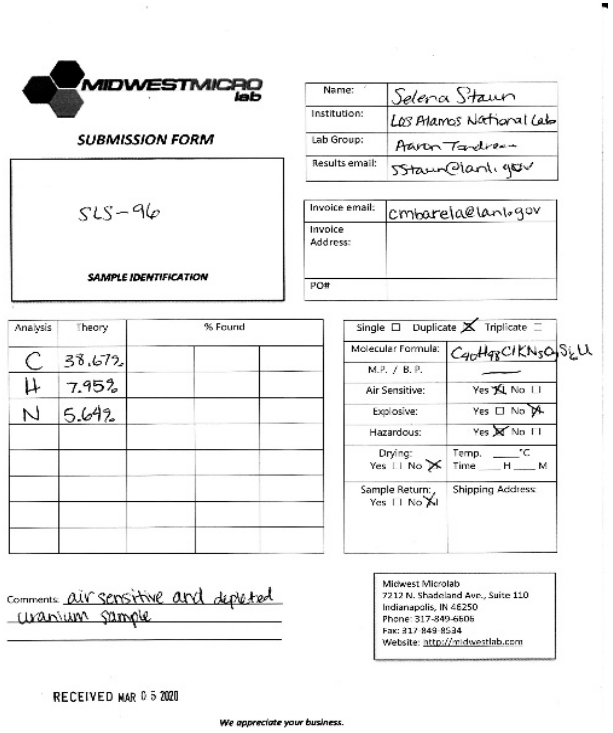
UClN*$_3$(Kcrypt): characterization

NMR Spectroscopy





UV-vis



MIDWESTMICRO lab

SUBMISSION FORM

Name:	Selena Stawn
Institution:	Los Alamos National Lab
Lab Group:	Aaron Tondreau
Results email:	SStawn@lanl.gov

SLS-96

SAMPLE IDENTIFICATION

Invoice email:	cmbarela@lanl.gov
Invoice Address:	
PO#	

Analysis	Theory	% Found		
C	38.67%			
H	7.95%			
N	5.69%			

Single ☐ Duplicate ☒ Triplicate ☐

Molecular Formula:	$C_{40}H_{88}ClKN_8O_8Si_6U$
M.P. / B.P.	____
Air Sensitive:	Yes ☒ No ☐
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☒ No ☐
Drying: Yes ☐ No ☒	Temp. ____°C Time ____H ____M
Sample Return: Yes ☐ No ☒	Shipping Address:

Comments: air sensitive and depleted uranium sample

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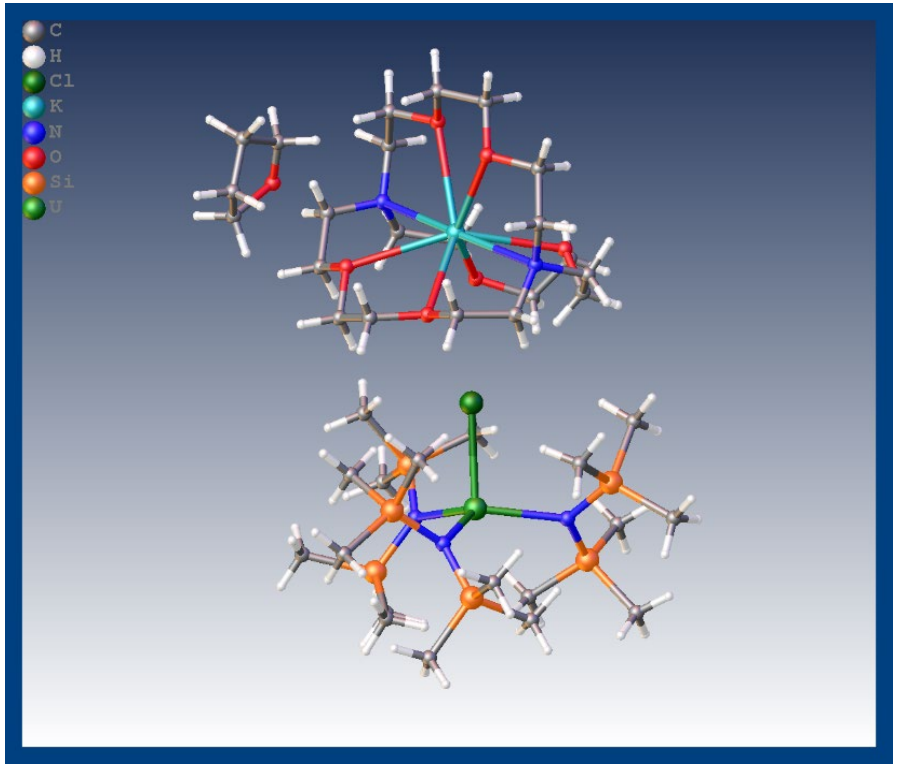
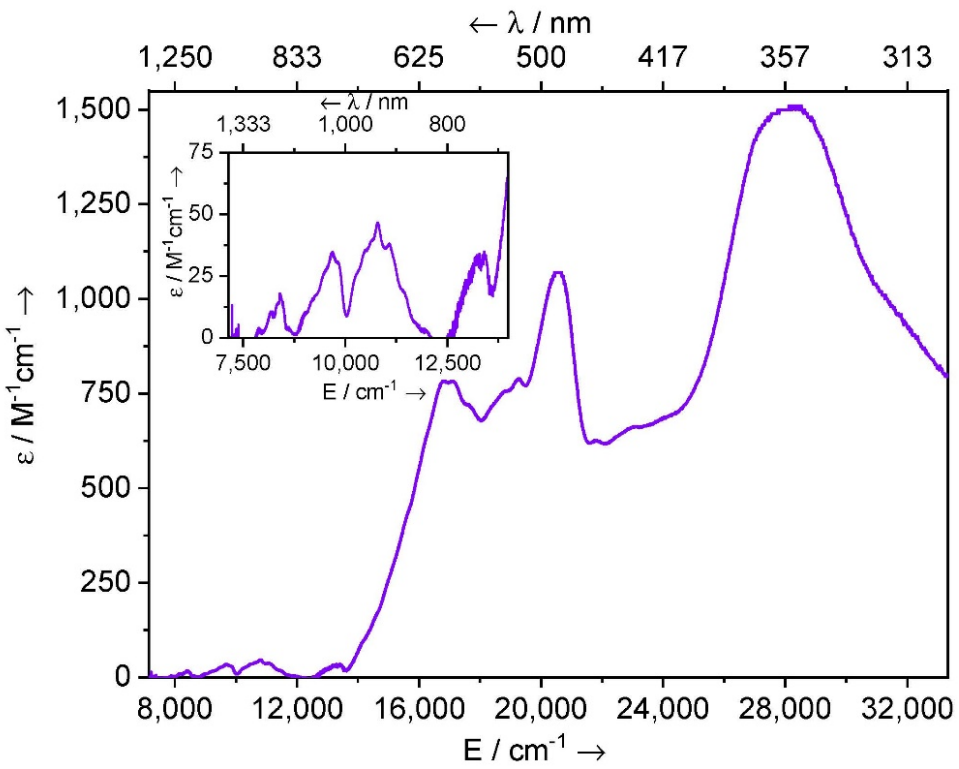
Elemental Analysis

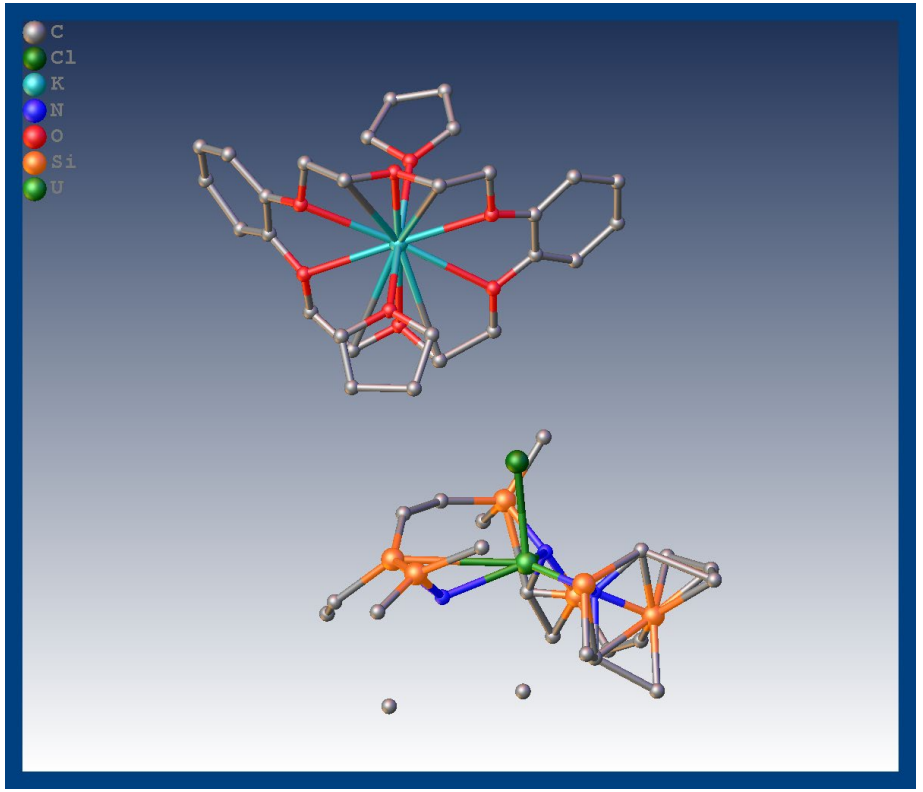


Solid-state molecular structure

$UClN^*_3(KDB18\text{-}c\text{-}6)(THF)_2$: characterization



UV-vis



Solid-state molecular structure

NMR Spectroscopy: similar to previous uranium complexes