

ThermoCon 2024 –Meeting Schedule

Hydrothermal geochemistry and critical minerals

Socorro, New Mexico / June 3-7, 2024

Hosts: Alexander Gysi, Nicole Hurtig, Laura Waters

New Mexico Institute of Mining and Technology

801 Leroy Place, Socorro, NM 87801, USA



Sunday 6/2/24

Arrival participants, shuttle ABQ airport-Socorro

Monday 6/3/24 (First day of conference)

Morning

8:30-9:15am Conference logistics and Intro/Goals of meeting (Gysi)

9:15-10am Talk: Hermann Lebit, Alma Energy, USA

Coffee 10-10:30am

10:30-11:15am Talk: John Kaszuba U. Wyoming, USA

11:15am-noon Talk: Hongkyu Yoon, Sandia National Laboratories, USA

Lunch break noon-1:30pm

Afternoon

1:30-2:15pm Talk: Lars Ruepke, GEOMAR, Germany

2:15-3pm Talk: Jame Kubicki, U. Texas El Paso, USA

Coffee 3-3:30pm

3:30-4:30pm Student speed talks

Dinner/free time 5-7 pm

7-9 pm Poster session Deju House

Tuesday 6/4/24

Morning

8:30-9:15am Talk: Daniel Harlow, GFZ Helmholtz Center Potsdam, Germany

9:15-10am Talk: Laura Waters, New Mexico Tech, USA

Coffee 10-10:30am

10:30-11:15am Talk: Xiaofeng Guo, Washington State U., USA

11:15am-noon Talk: Jeffrey Catalano, Washington U., USA

Lunch break noon-1:30pm

Afternoon

1:30-2:15pm Talk: Tanya Prozorov, Ames National Laboratory, USA

2:15-3pm Talk: Artas Migdisov, Los Alamos National Laboratory, USA

Coffee 3-3:30pm

3:30-4pm Focus Talk: Bryan Maciag, New Mexico Tech, USA

4-4:30pm Focus Talk: Sarah Smith-Schmitz, New Mexico Tech, USA

Dinner/free time 5-7 pm

7-9 pm Poster session Deju House

Wed 6/5/24

Morning

8-11:30am Lemitar Mountains excursion Group A

8:30am-noon GEMS workshop Group B

Lunch break (boxed lunch)

Afternoon

1-4:30pm Lemitar Mountains excursion Group B

1-4:30pm GEMS workshop Group A

Dinner/free time 5-7 pm

Evening microbrewery tour

Thursday 6/6/24

Morning

7:30-9:30am Bosque Del Apache, bird watching tour

Coffee 10-10:30am

10:30-11:15am Talk: Quishi Guan, CSIRO Mineral Resources, Australia

11:15am-noon Talk: Sandro Jahn, U. Cologne, Germany

Lunch break noon-1:30pm

Afternoon

1:30-2:15pm Talk: Marion Louvel, Institut des Sciences de la Terre d'Orleans, France

2:15-3pm Talk: Nicole Hurtig, New Mexico Tech, USA

Coffee 3-3:30pm

3:30-4:15pm Talk: Hannah Han, New Mexico Tech, USA

4:15-5pm Discussion Panel

6:30-9pm Dinner Deja House

Friday 6/7/24

Morning

8:30am-9:15 am Talk: Dmitrii Kulik, Paul Scherrer Institute, Switzerland

9:15-10am Talk: George Dan Miron, Paul Scherrer Institute, Switzerland

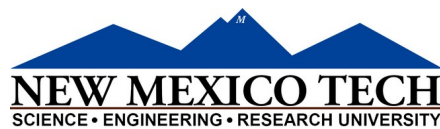
Coffee 10-10:30am

10:30-11:15am Talk: Alexander Gysi, New Mexico Tech, USA

11:15am-noon Talk: Shaul Huwitz, U.S. Geological Survey, USA

Lunch break noon-1pm

Departure participants, shuttle Socorro-ABQ airport



TALK SCHEDULE

	Time	Presenter		Talk title	Institution, Country
Monday 6/3	9:15-10am	Hermann	Lebit	Direct Lithium Extraction from Geothermal Brines: The New Oil	Alma Energy, USA
	10:30-11:15am	John	Kaszuba	Lithium mobility in interbedded sandstone and mudstone, Powder River Basin, Wyoming	U. Wyoming, USA
	11:15am-noon	Hongkyu	Yoon	Pore-scale modeling and experimental applications for reactive transport and flow behavior along mineral-fluid interfaces	Sandia National Laboratories, USA
	1:30-2:15pm	Lars	Ruepke	Understanding what's below: Using the open-source toolbox HydrothermalFoam to simulate submarine hydrothermal systems	GEOMAR, Germany
	2:15-3pm	James	Kubicki	Computational chemistry: Potential applications in economic geology	U. Texas El Paso, USA
Tuesday 6/4	8:30am-9:15 am	Daniel	Harlov	Fluid-aided rare earth element and actinide mobility in phosphate minerals: Nature and experiment	GFZ Helmholtz Center Potsdam, Germany
	9:15-10am	Laura	Waters	Isotope dilution methods in small experimental charges at high temperatures in cold-seal pressure vessels and applications	New Mexico Tech, USA
	10:30-11:15am	Xiaofeng	Guo	Experimental thermodynamic studies on mixing models of REE mineral phases	Washington State U., USA
	11:15am-noon	Jeff	Catalano	Surface-specific selectivity patterns during rare earth element adsorption: Implications for fractionation patterns in regolith-hosted deposits	Washington U., USA
	1:30-2:15pm	Tanya	Prozorov	Lanthanide adsorption in muscovite and phlogopite micas: Implications for rare earth elements separations	Ames National Laboratory, USA
	2:15-3pm	Artas	Migdisov	Transport and deposition of Nd in carbonate-bearing hydrothermal systems	Los Alamos National Laboratory, USA
	3:30-4pm focus talk	Bryan	Maciag	In situ Raman spectroscopy of rare earth element speciation in acidic sulfate-bearing aqueous fluids from 25 to 500°C	New Mexico Tech, USA

	4-4:30pm focus talk	Sarah	Smith-Schmitz	Raman spectroscopic investigation of Dy complexation in Cl-bearing hydrothermal solutions	New Mexico Tech, USA
Thursday 6/6	10:30-11:15am	Quishi	Guan	Molecular simulations to understand how critical metals transport in hydrothermal fluids	CSIRO Mineral Resources, Australia
	11:15am-noon	Sandro	Jahn	Toward the development of new thermodynamic models for hydrothermal fluids using molecular dynamics simulations	U. Cologne, Germany
	1:30-2:15pm	Marion	Louvel	Characterization of the speciation, solubility, and partitioning of metals in magmatic-hydrothermal systems using in situ X-ray spectroscopy	Institut des Sciences de la Terre d'Orleans, France
	2:15-3pm	Nicole	Hurtig	Rare earth element coordination chemistry using in situ Raman spectroscopy	New Mexico Tech, USA
	3:30-4:15pm	Hannah	Han	UV-Vis Spectrophotometric Determination of the Hydrolysis of Erbium in Near Neutral to Alkaline Aqueous Solutions from 25 to 75°C	New Mexico Tech, USA
Friday 6/7	8:30am-9:15 am	Dmitrii	Kulik	GEMS as an asset of geochemical modeling: 24 years of development and use	Paul Scherrer Institute, Switzerland
	9:15-10am	Dan	Miron	Beyond GEMS: Integration of thermodynamic datasets, activity models, and parameter optimization	Paul Scherrer Institute, Switzerland
	10:30-11:15am	Alex	Gysi	Hydrothermal mobilization, fractionation, and mineralization of REE in critical mineral deposits: A holistic approach combining field observations, experiments, and modeling	New Mexico Tech, USA
	11:15am-noon	Shaul	Hurwitz	Suggested future research on the geochemistry of continental hydrothermal systems for improved understanding of hazards, energy and mineral resources, and the limits of life on Earth and elsewhere in the solar system	U.S. Geological Survey, USA

POSTER SCHEDULE Monday/Tuesday 7-9 PM/Speed talks Monday 3:30-4:30pm

Presenter		Talk title	Institution, Country
Jonathan	Adams	Tellurium solubility in water vapor with implications for ore-forming processes: An experimental and numerical simulation study	New Mexico Tech, USA
Olivia	Bahhage	Scandium dissolution in alkaline carbonate media	Washington State U., USA
Debarati	Banerjee	The effects of salinity and pH on the hydrothermal solubility of DyPO ₄ at 500°C and 1.5 kbar	New Mexico Tech, USA
James	Chapman	-	U. Texas El Paso, USA
Jan	Dreschmann	Speciation in carbonatitic brine-melts and fluids from molecular simulations	U. Cologne, Germany
Jasper	Engelmann	Investigating the influence of fluid-rock interaction in the formation of high-temperature hydrothermal vent sites: Insights from coupled numerical modeling	GEOMAR, Germany
Yerko	Figueroa	Revisiting of the standard partial molal thermodynamic properties of Nd ³⁺ and Nd aqueous species from 25 to 250°C	New Mexico Tech, USA
Charles	Kershaw	The experimental determination of Ce, Y, and Er solubility and thermodynamic predictions in hydrothermal fluids at 350 to 500 °C	New Mexico Tech, USA
Emma Carlsen	Kindall	Calorimetric and structural characterization of gamma irradiated rare earth rhabdophanes	Washington State U., USA
Juejing	Liu	Large language model-based structured information retrieval and dataset construction: Examples on rare earth mineral thermodynamic properties	Washington State U., USA
Fernanda	Loza	Impact of ammonia on platinum(II) binding to goethite	Washington U., USA
Kevin	Padilla	Hydrothermal solubility experiments and determination of the stability of La ³⁺ aqua ion and La hydroxyl complexes in acidic to mildly acidic aqueous solutions to 250°C	New Mexico Tech, USA
Perla	Rodriguez Contreras	-	U. Texas El Paso, USA
Eric	Ruggles	Apatite rare earth elements chemistry and fluid evolution in the Lemitar Mountains carbonatite, New Mexico	New Mexico Tech, USA
Sophia	Stuart	Machine learning to constrain geologic controls on critical mineral occurrence at Wyodak Mine, Powder River Basin, Wyoming	Los Alamos National Laboratory, USA
Aadish	Velmani	Hydrothermal rare earth elements partitioning into fluorite: A fluid inclusion	New Mexico Tech, USA

		study from the Gallinas Mountains REE-bearing fluorite deposit in New Mexico	
Emily	Wright	Mineral-specific inhibition of palladium adsorption to iron (oxyhydr)oxides by chloride	Washington U., USA
Hongwu	Xu	-	Los Alamos National Laboratory, USA
Natalie	Yaw	Preparation of divalent Eu materials for thermodynamic study under hydrothermal conditions	Washington State U., USA
Xin	Zhang	-	Pacific Northwest National Laboratory
Xiaodong	Zhao	The structure of Yb(III) sulfate complexes in aqueous solutions at elevated pressure and temperature	Washington U., USA