



**SOLUTION MINING
RESEARCH INSTITUTE**

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CONFERENCE ANNOUNCEMENT

SMRI SPRING TECHNICAL CONFERENCE



Join Us in Salt Lake City, UT!

17–18 June 2018

Registration

About 200 technical delegates are expected to attend the conference. You must register early to ensure a space.

On-line registration for members starts 3 April
Non-member registration starts 1 May
Registration ends (last day) 24 May

As last year, attendees will be asked during online conference registration if they wish to buy a conference book and only for Class attendees, a class book, in addition to receiving a free USB drive of papers in pdf format. Attendees must order a book if they want one; no extras will be printed. This measure is being taken to save resources and recognize that many members prefer electronic copies of papers to large paper books.

Please see our [website](#) for the latest information and any changes necessary. For future updates of this announcement, list of papers, technical class details, and field trip information, see our website, select “Conferences” menu, then “Spring 2018 Conference”.

Conference Sponsors

GOLD: Lane Power & Energy Solutions, Inc.
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*A special **Thank You** to our Salt Lake City sponsors!
Conference Sponsorships for Salt Lake City are all sold out.*

Schedule of Events

Sunday, 17 June

8:00 am–5:00 pm: Technical Class, “Practical Applications of Salt Cavern Technologies—Calculations for Caverns” (optional, same class will be repeated in Fall 2018, Belfast)

6:30–8:30 pm: Ice Breaker Welcome Reception (optional, no charge)

Monday, 18 June

7:00–8:30 am: Breakfast (not available for spouses/friends)

10:00 am–2:00 pm Friends and Spouses guided walking/bus tour of major Salt Lake City sights

8:00–10:00 am: SMRI Business Meeting (SMRI members only; all employees of member organizations are encouraged to participate)

10:30 am–5:00 pm: Technical Conference (Lunch 12:00–1:30pm)

Oral research report (tentative) KBB Underground Technologies “Update of World Salt Deposits and Cavern Fields”

Oral research report McGill University “Hanging String Dynamics—Phase III Experimental and Theoretical Results”

7:00 pm–10:00 pm Casual dinner buffet at local brewery (included in registration fee) and SMRI conference conclusion

Tuesday, 19 June

No SMRI Events

Those registered for the 10th World Salt Symposium must relocate to Park City, where first event (opening brunch) starts at 10:30 am

Technical Class “Practical Applications of Salt Cavern Technologies—Calculations for Caverns”

Sunday, 17 June, 8:00 am–5:00 pm

Optional—Subject will be repeated at the Fall 2018 SMRI conference in Belfast, Northern Ireland. Limited to a maximum class size of 100, all participants must be registered for the conference and class. The lectures are tailored for training new staff, but will also serve as a refresher for experienced people.

This Class will explain and review some of the typical calculations used in cavern operations, and will include plenty of time for your questions. PDF files of class papers will be given to class participants on a USB stick, and a class book will be available for order only during registration for a small fee.

The Technical Class for the 2018 Salt Lake City and Belfast SMRI meetings will be held on Sunday (the day before the Business meeting and Technical Sessions). The Technical Class will be a series of lectures presented by several topic-expert lecturers using hands-on examples of calculations commonly made in the solution-mining practice. Approximately 15 topics will be covered in sessions involving a brief description, followed by the instructor’s illustrative calculation, followed by a typical hands-on calculation (done individually or by small teams). Examples of the calculations include casing and cement design, hydraulics of the freshwater and brine pumping system, brine chemistry and dissolution rate, pressure gradient and downhole pressures, gas-storage operating pressures, MIT testing and criteria, and design-alternatives selection considering financial implications. Lunch and coffee breaks are included in the registration fee, and are excellent opportunities for networking and more detailed questions.

SMRI tech classes always allow time for discussions and questions, and there are opportunities for making new contacts and having related discussions during breaks and lunch. Each class participant will receive a USB drive of the class papers and conference papers, and has option to order/purchase a printed Class Book during online registration. For more details, you may contact the Technical Class Chair Scott Rouze: phone 001-281-788-5016 or e-mail (scott.rouze@enbridge.com). An outline of the class schedule and presentations will be posted and follows in this announcement. Technical Class Registration Costs (prices include \$150/day fee for breakfast, lunch, coffee breaks, and AV):

- | | |
|--|-------|
| • Class Fee for members or Non-Member Government Regulators (“NMGR” must contact John Voigt) | \$400 |
| • Class Fee for Non-Members | \$650 |
| • Class Fee for Member Government Regulators | \$150 |

Oral Research Report Presentation

Monday, 18 June, 10:00 am

Per SMRI standard policy, these Research Reports will be posted online for member review only after final Research Committee acceptance, after the conference. One year later, the RRs will then be available for purchase by non-members.

“Update of World Salt Deposits and Cavern Fields” by KBB Underground Technologies. Newly completed SMRI research report RR2017-5 will be introduced and summarized during a spring 2018 oral presentation. This RR is an update of 2 popular 2006 and 2007 RRs separated into bedded and domal salt deposits, and the results are applicable to assessment and potential of cavern development, design, and use. The complete research report will include GIS compatible files.

“Hanging String Dynamics -- Phase III Experimental and Theoretical Results” by McGill University. A tentative second SMRI Oral Research Report will be presented in Salt Lake City: RR2018-1 McGill. This phase III of the ongoing McGill hanging string dynamics research was co-sponsored by the PRCI.

Technical Field Trips

Sorry, none planned for this shortened SMRI conference due to World Salt.

Technical Presentations

Monday, 18 June

SMRI will return to our normal 2 days of technical sessions followed by Wednesday technical field trips this fall in Belfast.

A tentative list of about 8 papers and authors will be posted on the website as soon as available and attached to the Conference Announcement, if available. Any revised version of the technical paper list will be updated on the website as soon as available but will be subject to change. For more technical program information, or for any author’s questions, please contact a Program Chair:

Dieter Brückner (Program Chair)
Phone: +49 341-33600-0
dieter.brueckner@ifg-leipzig.de

Eric Busch (Assistant Program Chair)
Phone: +1 713-559-9953
eric@lonquist.com

Additional Activities

■ SPOUSE AND FRIENDS ATTENDANCE:

Spouses and friends are invited and welcome to: the Icebreaker Reception (no charge), the Monday Night Dinner (\$75 fee), and the Monday guided tour of Salt Lake City highlights (\$55 fee). Participation in these activities is OPTIONAL, and spouses and friends **must be pre-registered and paid by 24 May**. Registration depends on space available. We are sorry but do not offer the option of joining SMRI breakfasts and lunches this meeting. Please wear your name badge for all functions. For more information about the tour or spouses/friends options, please contact SMRI Assistant Executive Director Dawn Langlinais by phone: +1 918-914-2499 or email: dawnl@solutionmining.org

■ ICEBREAKER WELCOME RECEPTION

Sunday 17 June, 6:30–8:30 pm

To open the conference, SMRI is inviting all participants including spouses and friends, to a popular, informal get-together. Attendance is free, so come, relax, and enjoy an evening of light appetizers and the camaraderie of friends and colleagues.

■ BUSINESS MEETING

Monday Morning 18 June, 8:00–10:00 am (SMRI Members Only)

The SMRI business meeting will be held Monday morning to transact business of the Institute. All members are welcome, including all staff of member organizations, not only voting representatives.

■ MONDAY NIGHT DINNER EVENT

18 June, 7:00–10:00 pm (optional, delegates free, \$75 per person)

The Monday Night Dinner Event will be held at the Squatter's Brewer (4-block walk to venue with hosted bar and casual, Brewmaster Dinner Buffet).

■ FRIENDS AND SPOUSES TOURS

Monday, 18 June, 10:00 am–2:00 pm (optional, \$55 per person, 25 person max)

The bus will pick up from the hotel lobby at 9:45 am for 10 am departure. A lunch stop is scheduled; however, the price of lunch is not included in the tour.

Attire

Casual attire is suggested for the meeting and all associated events. For the Monday spouses/friends tour, wear comfortable clothes for outdoor weather, including shoes appropriate for walking. Salt Lake City June weather should be nice with bright sun, but as always, check the weather forecast.



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Conference Executives

John O. Voigt (SMRI or Database Questions)
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SMRI Technical Class Organizing Committee

Scott Rouze (SMRI 2018 Technical Class Chair)
Dieter Brückner (SMRI 2018 Program Chair)
Leo Van Sambeek (SMRI Research Coordinator)

Future SMRI Conferences

Summer 2018

19–21 June 2018

10th World Symposium

Park City, Utah, USA

(Salt Lake City Region)

Please see <http://www.worldsaltsymposium.org> for details and to register. SMRI encourages our members to participate in World Salt Symposium X.

Fall 2018 SMRI

23–26 September 2018

Belfast, Northern Ireland, UK

Technical Class will be repeated from Salt Lake City: "Practical Application of Salt Cavern Technologies—Calculations for Caverns."

Spring 2019 SMRI

7–10 April 2019

New Orleans, Louisiana, USA

Technical Class to be determined
(let us know your suggested 2019 class topic).

Fall 2019 SMRI

European Conference

(location to be determined)

REGISTRATION AND FEES



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Deadline: 28 May, 2018

Each person attending any part of the technical conference must be in the SMRI database and must register for the conference. If you cannot login to the website and know you have a record to update, please contact John Voigt. Online registration and payment in advance is required by all persons attending. No registrations will be held or accepted without payment. All attending non-technical spouse and friends must be registered as “guests” before completing your registration’s online payment. Space for specific events is limited.

Member registration starts	3 April (see website for latest information)
Non-member registration starts	1 May
Registration ends (last day)	24 May

Registration Fees

Required SMRI \$200 member registration fee includes breakfast, lunch, coffee breaks, the Monday night Brewmaster Dinner event, AV, and a USB drive of technical paper files, but NOT printed conference or class books. All prices are in U.S. dollars.

Members	\$200
One speaker per technical paper	\$0 (non-members 1 time / 3 years)
Government regulators members	\$200
Non-members	\$600

Technical Class Registration Fees (Optional)

Class held on Sunday, 17 June, 2018 “Practical Applications of Salt Cavern Technologies—Calculations for Cavems”

Members	\$400
Government regulators members	\$150
Non-members	\$650

Additional Activities (Optional)

Sunday Icebreaker Welcome Reception	No Charge
Monday Spouses and Friends Tours	\$55
Monday Evening Dinner	No Charge for delegates \$75 for Spouses/Friends

Registration Instructions

(Honorary members please register with Dawn Langlinais)

(Technical Class instructors should use registration code and register for the class)

Login and Register at
www.solutionmining.org

- Participants will select options for technical delegate first, then may add spouse/guest at “guest”. Guests do not attend technical sessions.
- The system will display the total amount due, in USD (\$).
- This amount must be paid by credit card to complete online registration.
- Check and print your registration confirmation as shown on the screen, (invoice/receipt).

Cancellation Policy and Changes: All registration changes or cancellations should be made online. **No cancellations or refunds after 24 May 2018.** (This includes registration for the conference, technical class, the Monday dinner, and the spouses/friends tour). For any registration questions or problems, contact:

Dawn Langlinais
(Assistant Executive Director)
Phone: +1 918-914-2499
dawnl@solutionmining.org

LATE REGISTRATIONS AFTER 24 MAY 2018 will be charged a \$250 late fee in addition to the conference fee.

Hotel Information

Marriott City Center

220 South State Street, Salt Lake City, Utah 84111 USA

Website Reservations: [Hotel Website Link](#)

Hotel Direct Phone: +1 866-961-8700 (from Europe, dial 00 before this number)

Each SMRI participant is responsible for making their own hotel reservations. SMRI room rate of \$129 plus tax can be booked for the dates of June 15–19, 2018.

Hotel reservations may be made starting immediately. The last day to make reservations at the SMRI rate is May 25, 2018. Please tell reservations that you are with “SMRI” group.

The Marriott City Center is a 5-minute walk from the Gallivan Center. The hotel is 13 minutes by foot from Temple Square and 0.9 miles from Clark Planetarium. There is also a close and convenient airport shuttle stop at a very reasonable cost.

Travel Information

Salt Lake City International is a major airport, code is: ‘SLC’

SLC is a Delta Airlines hub, but many airlines, such as American United, Southwest, and international carriers serve SLC.

Arrival by plane: SLC Airport is about 20 minutes by taxi to the Marriott City Center conference hotel. Taxis, rental cars, or shuttle buses are available to the hotel. The hotel does not offer shuttle service to/from the airport.



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Authors and Technical Papers List (as of 13 March 2018)

SMRI TECHNICAL CONFERENCE, 18 June 2018 - Salt Lake City, United States

<u>Author(s)</u>	<u>Organization(s)</u>	<u>Title</u>
Heike Bernardt	KBB Underground Technologies, GmbH	Oral Research Report RR2017-5 SMRI, KBB-UT, "Update of Worldwide Salt Deposits and Cavern Fields"
Presented by Ratigan, Joe (SMRI RR Project Sponsor, for McGill University)	Ratigan Engineering & Consulting LLC	Oral Research Report RR2018-1 SMRI, McGill University, "Hanging String Dynamics -- Phase III Experimental and Theoretical Results"
Cyran, Katarzyna	University of Cracow	Shapes of caverns in different Polish salt deposits
Lahonen, Caitlyn	Nutrien- Patience Lake Division	The History and Evolution of the Patience Lake Solution Potash Mine, Saskatchewan, Canada
Morgan, Jessica	TRE Altamira	InSAR for monitoring cavern integrity: 2D surface movement over Bryan Mound
Reed, Alex	Canadian Standards Association, (CSA)	Introducing the 2018 Edition of the CSA Z341 Series of Standards
Snarski, Adam	Fluor Federal Petroleum Operations	Mechanical Integrity Testing Program Improvements in Liquid Hydrocarbon Domal Salt Storage Cavern Access Wells at the Strategic Petroleum Reserve
Valstar, Dirk	Schlumberger	Acquiring a baseline casing thickness log for future corrosion monitoring without pulling the hanging string
Voegeli, Samuel J.	RESPEC	TD study of the temperature influence on salt creep during solution mining of salt caverns
Warneke, Joel	Cavern Solutions, Inc.	Reporting of Reserves for Solution Mined Salt Diapirs

SMRI Technical Class Topics and Instructors

“Engineering Calculations in Solution Mining”

Sunday, 17 June 2018, Salt Lake City, Utah, (Tentative as of 13 Mar 2018)

Scheduled to be repeated at SMRI Fall 2018 Belfast, Northern Ireland Conference



<u>INSTRUCTOR</u>	<u>Title</u>	<u>Major PRESENTATION objectives</u>
Heike Bernhardt , KBB Underground Technologies GmbH	4) Hydraulics of leaching, dewatering, and product movement	Allowable flow rates, product density, fluid viscosity
Heike Bernhardt , KBB Underground Technologies GmbH	8) Understanding pumps	Pump size, horsepower, maximum pressure, pump-characteristic curves
Pierre Bérest , Ecole Polytechnique	9) Cavern and Well Pressure Calculations	Pressure and stress gradients for rock, brine, products, nitrogen for MIT calculations and specifying minimum and maximum operating and test pressures
Benoît Brouard , Brouard Consulting	11) Example calculations using SMRI's Toolbox	Repeating some of the above calculations using software specifically written for solution-mining and storage calculations
Eric Busch , Lonquist & Co., LLC	2) Understanding casing schedules and cementing diagrams	Technical objectives of casings and understanding mill-specifications
Lola Piché , North Rim Exploration Ltd	1) Salt and Caprock Properties	Calculating density, porosity, strength, stiffness, permeability, etc.
Joe Ratigan , Ratigan Engineering & Consulting LLC	5) Pipe flow velocity calculations and limiting criteria	A brief overview of hanging string dynamics and application to different flow configurations
Ken Roane , Sabine Storage & Operations, Inc.	3) Calculation of casing collapse and burst pressures and factors of safety	Cement pressures for different cements and methods of cementing large-diameter casings
Scott Rouze , Enbridge	10) Calculating volumes of stored gas in domal caverns	Cavern parameters and equations involved for estimating gas stored, sources of uncertainty, and degrees of accuracy
Leo Van Sambeek , SMRI	6) Solution chemistry and dissolution-rate models	Solubility versus temperature and pressure, theory and application of lab-based dissolution rate models
Fritz Wilke , DEEP Underground Engineering GmbH	7) Blanket Management Calculations and Estimates	Theory and practice for blankets, volume calculations and thickness management