

THE MECHANICAL BEHAVIOR OF SALT IX



SALTMECH IX

SEPT 12 - 14 2018
BGR HANNOVER | GERMANY

PROGRAM



September 12, 2018 (Wednesday)		
08:30	OPENING & WELCOME <i>Dr. V. Steinbach (Vice President of the BGR)</i>	
08:50	Session 1: Overview <i>S. Heusermann (LUH) & G. Enste (BGR)</i>	Career reflections on the mechanical behavior of salt <i>F. D. Hansen & L. Van Sambeek</i>
09:10		Percolation in salt rocks <i>W. Minkley, D. Brückner, C. Lüdeling</i>
09:30		Intense damage processes in salt rocks – a new approach for laboratory investigations, physical modelling and numerical simulation <i>K.-H. Lux, S. Lerche, O. Dyogtyev</i>
09:50		Application of ultrasonic and seismic methods for a comprehensive seismic in situ characterization of rock salt <i>K. Schuster</i>
10:10	COFFEE BREAK	
10:30	Session 2: Microstructures of Salt Formations <i>C. Spiers (Utrecht University) & N. T. Rempe</i>	Effects of Plastic Deformation on the Transport Properties of Rocksalt <i>C. J. A. Sinn, P. Giacomel, C. J. Peach, S. J. T. Hangx, C. J. Spiers</i>
10:50		Subgrain development in experimentally deformed rock salt <i>J. Linckens, J. Heeb, G. Zulauf, M. Mertineit</i>
11:10		Fabric, paleostress and mineralogical composition of impure Rotliegend rock salt (North German Basin) <i>M. Henneberg, M. Mertineit, J. Hammer, G. Zulauf</i>
11:30		Microfabrics and composition of Staßfurt and Leine rock salt (Upper Permian) of the Morsleben site (Germany): Constraints on deformation mechanisms and palaeodifferential stress <i>T. Kneuker, M. Mertineit, M. Schramm, J. Hammer, G. Zulauf, N. Thiemeyer</i>
11:50		Composition and microstructure of pure halite layers in Upper Permian Zechstein 2 rock salt (Gorleben salt dome) <i>M. Mertineit, M. Schramm, T. Kneuker, J. Hammer, G. Zulauf, N. Thiemeyer</i>
12:10		Mechanical Behavior of Bedded Salt Interfaces and Clay Seams Subjected to Shear <i>S. R. Sobolik, S. Buchholz, B. Reedlunn, E. Keffeler, L. Roberts</i>
12:30	GROUP PHOTO & LUNCH	



September 12, 2018 (Wednesday)		
13:40	Session 3: Laboratory Testing <i>T. Popp (IfG) & U. Dusterloh (TU Clausthal)</i>	WEIMOS: Laboratory Investigations of Damage Reduction and Creep at Small Deviatoric Stresses in Rock Salt <i>K. Herchen, T. Popp, U. Dusterloh, K.-H. Lux, K. Salzer, C. Lüdeling, R.-M. Günther, C. Rölke, W. Minkley, A. Hampel, S. Yildirim, K. Staudtmeister, A. Gährken, J. Stahlmann, B. Reedlunn, F.D. Hansen</i>
14:00		The experimental study of the short- and long-term strength of Chinese highly impure rock salt <i>G. Wang, Z. Hou, J. Liao, J. Liu</i>
14:20		Petrological and Microhardness Study on Blue Halite from Kłodawa Salt Dome (central Poland) <i>T. Tobała, K. Cyran, M. Rembiś</i>
14:40		Tomographic observation of injection procedures for fracture sealing <i>J. Kulenkampff, L. Bittner, M. Gründig, J. Lippmann-Pipke</i>
15:00	COFFEE BREAK	
15:20	Session 4: Geotechnical Barriers <i>K. Wiczorek (GRS) & F. Hansen (RESPEC)</i>	Porosity and Permeability: Literature Review and Summary <i>K. L. Kuhlman & E. N. Matteo</i>
15:40		Modelling time-dependent strain and gas permeability evolution in salt concrete <i>M. Middelhoff, O. Czaikowski, M. Mánica, S. Olivella</i>
16:00		Geochemical and hydro-mechanical characterization of MgO-based (“Sorel”) building materials for engineered barrier systems (EBS) in salt formations <i>T. Popp, D. Freyer, K. Salzer, C. Rölke, M. Gruner</i>
16:20		Hydro-mechanics in a seal/rock salt system <i>O. Czaikowski, U. Hertel, K. Jantschik, K. Wiczorek</i>
16:40		Investigation of diffusive and advective induced corrosion behaviour of cement-based sealing materials in rock salt <i>K. Jantschik</i>
17:00		Characterization of salt backfill with repository applications <i>M. Mills, D. Stührenberg, F. Hansen</i>
17:20		Diffusion in the pore water of compacted crushed salt <i>A. Rübel & J. Flügge</i>
17:40		Closure of the Teutschenthal backfill mine – About the challenge to elaborate a geomechanical safety concept in salt formations <i>T. Popp, W. Minkley, E. Fillinger, V. Boettge</i>



September 13, 2018 (Thursday)		
08:30	Session 5: Constitutive Models K.-H. Lux (TU Clausthal) & S. Sobolik (SNL)	An improved creep constitutive model of rock salt <i>Z. Hou, M. Li, Y. Gou, M. Li</i>
08:50		Use of laboratory tests in constitutive models for rock salt: a focus on volumetric strains <i>L. Blanco-Martín, K. Herchen, A. Rouabhi, P. Labaune, K.-H. Lux</i>
09:10		Joint Project III on the Comparison of Constitutive Models for the Mechanical Behavior of Rock Salt: Modeling of the Temperature Influence on Deformation at WIPP <i>A. Hampel, R.-M. Günther, K. Salzer, C. Lüdeling, W. Minkley, A. Pudewills, S. Yildirim, K. Staudtmeister, R. Rokahr, A. Gährken, C. Missal, J. Stahlmann, K. Herchen, U. Düsterloh, K.-H. Lux, B. Reedlunn, J.G. Argüello, F.D. Hansen</i>
09:30		Joint Project III on the Comparison of Constitutive Models for the Mechanical Behavior of Rock Salt: Reinvestigation into Isothermal Room Closure Predictions at the Waste Isolation Pilot Plant <i>B. Reedlunn</i>
09:50		WEIMOS: Joint project on further development and qualification of the rock mechanical modelling for the final HLW disposal in rock salt Overview and first results on tensile stress modelling <i>C. Lüdeling, K. Salzer, R.-M. Günther, A. Hampel, S. Yildirim, K. Staudtmeister, A. Gährken, J. Stahlmann, K. Herchen, K.-H. Lux, B. Reedlunn, S. Sobolik, F.D. Hansen, S.A. Buchholz</i>
10:10		Advanced development of the constitutive model TUBSsalt for rock salt regarding the influence of Lode angle effects <i>A. Gährken, K. L. DeVries, J. Stahlmann</i>
10:30	COFFEE BREAK	
10:50	Session 6.1: Numerical Modelling Site Studies E. Matteo (SNL) & N. Müller-Hoeppe (BGE)	Back analysis of pressure driven percolation at the Weeks Island Mine <i>M. Knauth & W. Minkley</i>
11:10		TM- and THM-coupled modeling to analyze the barrier integrity in bedded salt under consideration of heat generating nuclear waste <i>W. Liu, R. Eickemeier, S. Fahland, M. Knauth, W. Minkley, E. Völkner, J. Hammer, T. Kühnlenz, T. Popp</i>
11:30		Salt Diapirism and Seismic Anisotropy: A modelling study <i>P. Prasse, J. Wookey, M. Kendall, M. Dutko</i>
11:50		A Relation of Anisotropic Damage and Permeability in the EDZ of Drifts in Rock Salt <i>C. Missal & J. Stahlmann</i>
12:10	POSTER SESSION & LUNCH	



September 13, 2018 (Thursday)		
13:20	Session 6.2: Numerical Modelling Site Studies <i>B. Reedlunn (SNL) & L. Blanco-Martin (Mines ParisTech)</i>	Three-dimensional geomechanical analysis of the southern part in the Morsleben repository <i>R. Seeska, R. Eickemeier, S. Fahland, S. Heusermann</i>
13:40		Deformation and stresses related to the Gorleben salt structure: insights from 3D numerical models <i>T. S. Baumann, B. J.P. Kaus, A. A. Popov</i>
14:00		Geomechanical stability proof of the Asse II mine and forecast of the further development using an extensive 3D-model <i>W.-P. Kamlot, R.-M. Günther, G. Gärtner, L. Teichmann</i>
14:20		Numerical analysis of the structural behaviour of complex extensive geomechanical underground systems with filigree local substructures in the presence of imponderables A contribution with respect to the systemization of the analysis process with exemplary application on the situation existing on the south flank of the ASSE II salt mine (Schacht ASSE II/Südflanke) <i>K.-H. Lux, O. Dyogtyev, S. Lerche</i>
14:40		Mine optimisation in primary and secondary phases <i>C. Lüdeling, A. Jockel, P. Kamlot, N. Farag, W. Schreiner</i>
15:00		Fluiddynamic processes within a closed repository in rock salt mass without or with additional components for long-term monitoring <i>K.-H. Lux, R. Wolters, J. Feierabend, T. Pan, M. Rutenberg</i>
15:20		Back-Analysis: Rock Burst Merkers 1958 <i>W. Minkley, N. Farag, C. Lüdeling, M. Nest, H. Baumert, J. Schleinig, F. Tonn, H. Zienert</i>
15:40		COFFEE BREAK



September 13, 2018 (Thursday)		
16:00	Session 7: Geology of Salt Formations <i>B. Franke (LBEG) & J. Hammer (BGR)</i>	A cautionary WIPP tale of unintended consequences <i>N. T. Rempe</i>
16:20		Geological and constitutive models of generic bedded salt repositories for high-level radioactive waste in Germany <i>E. Völkner, W. Liu, T. Kühnlenz, J. Hammer, S. Fahland, R. Eickemeier, T. Popp, W. Minkley, M. Knauth</i>
16:40		Problems of the integrated development of the potassium salt and oil deposits geographically collocated in the Pripyat trough (Belarus) <i>N. S. Petrova, N. Y. Denisova, A. V. Kirykovich</i>
17:00		Geological exploration and 3D model of the Asse salt structure for SE expansion of the Asse II mine <i>L. Pollok, M. Saßnowski, T. Kühnlenz, V. Gundelach, J. Hammer, C. Pritzkow</i>
17:20		Detailed petrographic and structural studies of salt rocks as basis for an internal geological 3D-model of the Asse salt structure (German Zechstein) <i>M. Saßnowski, L. Pollok, T. Kühnlenz, J. Hammer, C. Pritzkow</i>
18:30	CONFERENCE DINNER	



September 14, 2018 (Friday)		
08:50	Session 8.1: Salt Caverns P. Bérest (Ecole Polytechnique) & D. Zander-Schiebenhöfer (DEEP.KBB)	Failure mechanisms in a cycled gas cavern <i>B. Brouard, P. Bérest, A. Frangi</i>
09:10		Squeeze mining-induced stress changes in the faulted overburden of the Veendam salt Pillow <i>A. F. Raith & J. L. Urai</i>
09:30		Rock-mechanical investigations regarding the proof of long-term safety of abandoned salt production cavities using hazardous waste as backfill material <i>R. Wolters, K.-H. Lux, U. Düsterloh</i>
09:50		A glance into the mechanical behavior of salt caverns towards future natural gas strategic storage in Brazil <i>P. A. L. P. Firme, D. Roehl, C. Romanel</i>
10:10		Salt Rock, a Strategic Geomaterial in Brazil <i>A. M. Costa, P. V. M Costa, F. Ruggieri, N. F. F. Ebecken, A. C. O. Miranda, K. Nishimoto, J. R. Meneghini, S. M. de Eston, G. de Tomi, C. Brandão, A. Breda</i>
10:30	COFFEE BREAK	
10:50	Session 8.2: Salt Caverns H.-J. Schweinsberg (STORAG ETZEL) & R. van Steveninck (AkzoNobel)	Geological Basics, Rock Mechanical Calculations and Methodology for the Evaluation of CAES and H2 Storage Capacity in North Germany's Salt Structures <i>S. Donadei, L. Pollok, G.-S. Schneider, D. Zapf</i>
11:10		Geological characterization of salt cavern sites with emphasis on spatial modelling uncertainties <i>B. Otto & A. Binia</i>
11:30		Numerical study of a novel two-well horizontal gas storage cavern in thin-bedded rock salt in China <i>M. Li, Z. Hou, M. Li, Y. Gou, S. Tao</i>
11:50		Numerical modeling of salt and gypsum dissolution: Test case and comparison <i>F. Laouafa, J. Guo, M. Quintard</i>
12:10	POSTER SESSION & LUNCH	



September 14, 2018 (Friday)		
13:00	Session 9: Monitoring & Field Investigations <i>K. Kuhlman (SNL) & T. Beilecke (BGR)</i>	Measurements of the Borehole Wave Velocity for Characterization of Excavation-Damaged-Zones <i>K. Salzer, J. Philipp, T. Popp, M. Wiedemann, J.-P. Schleinig, F. Tonn</i>
13:20		Observation of seismic and aseismic rock behavior during large scale loading experiment <i>K. Plenkers, J. Philipp, D. Dörner, W. Minkley, T.Popp, M. Wiedemann</i>
13:40		Review of ground movements as a result of salt mines flooding in Solotvyno, Ukraine <i>X. Daupley, V. Banks, L. Stoeckl</i>
14:00		InSAR technology for salt mines monitoring <i>V. Velasco, C. Sanchez, C. Couso, M. Garcia</i>
14:20		PSI-based German Ground Motion Service (BBD) to investigate natural and anthropogenic induced underground movements <i>A. Kalia, M. Frei, T. Lege</i>
14:40	CONFERENCE CLOSING / CONCLUSIONS <i>Prof. Dr. R. Watzel (President of the BGR)</i>	

September 15, 2018 (Saturday)	
TECHNICAL TOURS	
Technical Tour 1:	Potash mines in Zielitz and visit the town of Staßfurt, Saxony-Anhalt (D)
Technical Tour 2:	Morsleben repository, Saxony-Anhalt (D)



POSTER SESSION

September 13 & 14, 2018 (During the lunch break)	
Overview	A WIPP-based scrutiny of assumptions about salt repositories <i>N. T. Rempe</i>
Laboratory Testing	The experimental study on the stress-, dilatancy- and impurity-dependent permeability behavior of impure rock salt in China <i>Z. Hou, G. Wang, J. Liao, H. Sun, S. Tao</i>
	Investigation of the flow along the contact seam between salt cement and rock salt <i>K. Jantschik, J. Kulenkampff, H. C. Moog</i>
	A density-based classification method for highly impure rock salt <i>Z. Hou, G. Wang, W. Feng, J. Liu, F. Mehmood</i>
Constitutive Models	Study of an in-situ-problem under room temperature and heated conditions with the constitutive model TUBSSalt for rock salt <i>A. Gährken, C. Missal, J. Stahlmann</i>
	The Lubby-CF constitutive model for the thermo-mechanical behavior of rock salt. Current version with recent developments, modifications and extensions <i>S. Yildirim</i>
Geology of Salt Formations	Analysis of clay-marl thickness at the Northern Prospect of Petrikov potash deposit for the purpose increment waterproof thickness <i>D. Barbikau, A. Klabuk, V. Kutyrla, I. Mitsko</i>
Salt Caverns	DATAROCKS: A web-based database of the Chinese highly impure rock salt for building energy storage caverns <i>H. Xie, L. Lu, G. Wang, W. Feng, Z. Hou</i>