

TECHNICAL PROGRAM WCSB10

Day 1: Tuesday, May 31

07:30 – Registration Caledonien Lobby

08:15-08:30 **Opening Ceremony** Caledonien Hall

Session 1: TOS/QC/QA/QM 08:30-10:00 Caledonien Hall

SOUND CHECK MONDAY 30TH AT 21:00.

08:30 KEYNOTE: Francis F. Pitard, **The complex futility of the Liberation Factor**

09:00 KEYNOTE: Dominique François-Bongarçon, **Liberation Factor for ‘closely sieved’ material**

09:30 TECHNICAL: Oscar Dominguez, **Theory of Sampling (TOS) & Quality Assurance Quality Control (QAQC) enabling the application and expectations of new technology and data processing**

09:55-10:30 COFFEE BREAK, POSTER SESSION (Blomsterhaven) & EXHIBITION

Session 2: TOS/QC/QA/QM 10:30-12:00 Caledonien Hall

SOUND CHECK 10:00 (when break starts)

10:30 KEYNOTE: Richard Minnitt, **Calibration of K and Alpha for bulk commodities and precious metal ores**

11:00 Daniel Johnson et.al., **Proactive rolling bias test applied on sample stations**

11:20 Bo Svensmark, **Extensions to the Theory of Sampling 2. The Sampling Uncertainty (SU) and SU as alternative to variographic analysis.**

11:40 Fabio Maggiore et al., **Process optimization by real time analysis of liquids’ composition in metal and mining**

12:00-13:30 LUNCH Grenseløs Restaurant

SESSION 3: TOS/QC/QA/QM 13:30-17:00 Caledonien Hall

Session 3A: 13:30-14:45 SOUND CHECK 12:00 (when break starts)

13:30 KEYNOTE: Pentti Minkkinen, **Monitoring the lot mean uncertainty estimates**

14:00 A. Neressa Sukha: **Challenges in quality assurance and quality control system development**

14:20 Trevor Bruce & B. Michael Hidding, **Economic benefits of improving precision**

14:45- 15:15 COFFEE BREAK, POSTER SESSION (Blomsterhaven) & EXHIBITION

Session 3B: 15:15 – 16:20 SOUND CHECK 14:45 (when break starts)

15:15 Oscar Dominguez & John Kelly, **Implementing proactive Quality Assurance Quality Control (QAQC) & Quality Management (QM) practices at coal testing laboratories**

15:35 TECHNICAL: Rodolfo Romanach et al., **Differentiating analytical error from sampling errors in PAT methods through variographic analysis**

15:55 Dominique François-Bongarçon, **Comminution sizes in sampling calculations**

16:15-17:00 POSTER SESSION & EXHIBITION

18:00 - RECEPTION Grenseløs Restaurant

DAY 2: Wednesday, June 1	
08:15-08:30 Welcome & Program Updates	Caledonien Hall
Session 4: Process Sampling (PAT) 08:30-10:00 SOUND CHECK Tuesday 31st May at 16:15 (right after the last session for the day) Caledonien Hall	
08:30 KEYNOTE: Kim H. Esbensen, The Sampling Interface—a critical success factor in process sampling and PAT	
09:00 Lukas Rybok et al., Online elemental analysis for process control in the mineral processing industry	
09:20 Henning Reichardt, et al., Implementation of a QAQC programme for in-situ grade control by Pulsed Fast and Thermal Neutron Activation methods	
09:40 Henry Kurth & L. Balzan, Process analytical technologies for precise, timely and representative elemental and moisture measurement for conveyed flows	
10:00-10:30 COFFEE BREAK, POSTER SESSION (Blomsterhaven) & EXHIBITION	
Session 5: Mining /Minerals/ Metals 10:30-12:00 SOUND CHECK 10:00 (when break starts) Caledonien Hall	
10:30 D. Aldwin Vogel, Moisture Determination. Mass loss on drying—Commercial sampling washed away	
10:50 Eirik Djuve & Elke Willam Thisted, Case Study--Improved sampling of iron sludge at Glencore Nikkelverk	
11:10 A. Reinaldo Novaes & B. Michael Hidding, Choosing metallurgical samplers or static cutters for process control in slurry: when or why to avoid the increment delimitation error	
11:30 Willem P. Slabbert, Cross belt sampler: Mechanical design of the world's largest hammer sampler for bauxite export contractual requirements	
12:00-13:30 LUNCH Grenseløs Restaurant	
SESSION 6 A: Sampling for Environment / Sustainability /Circular Economy 13:30-17:00 Caledonien Hall	
Session 6A: 13:30-14:45 SOUND CHECK 12:00 (when lunch break starts)	
13:30 TECHNICAL: Roger Brewer et.al., Fake Data? The need for sampling theory in environmental research and investigations	
13:55 Hans Møller & Kim H. Esbensen, Representative Sampling for condition monitoring of in-service wind turbine bearings: Challenges and solutions over 10 years	
14:15 TECHNICAL: Stéphane Brochot et al., Experimental determination of the constitutional heterogeneity for sampling waste printed circuit boards	
14:45-15:15 COFFEE BREAK, POSTER SESSION (Blomsterhaven) & EXHIBITION	
Session 6 B: 15:15 – 16:20 SOUND CHECK 14:45 (when break starts)	
15:15 TECHNICAL: Bert Pauels, Sampling in a precious metals refining plant—A practical approach for a complex problem	
15:40 Sheryl A. Tittlemier, Challenges of sampling grain for mycotoxin analysis	

16:00	Agathe Hubau et al., Estimation of uncertainty for measuring metals content in waste printed circuit boards *Presented by Stéphane Brochot	
16:20-17:00	POSTER SESSION & EXHIBITION	Blomsterhaven
19:00 -	GALA DINNER & PIERRE GY GOLD MEDAL CEREMONY Transport from hotel from 18:45	Mannskapsmessa on Odderøya

Day 3: Thursday, June 2		
08:15-08:30	Welcome & Program updates	Caledonien Hall
Session 7: Mining / Minerals / Metals 08:30-10:05 SOUND CHECK at June 1st at 16:20 after the last session of the day Caledonien Hall		
08:30	KEYNOTE: Simon C. Dominy, Sampling of high-nugget conglomerates from Western Australian Pilbara: Bulk sampling at Beatons Creek gold project, Nullagine	
09:00	Oluf Bøckman & B. Hege Indresand, Mobile dust sampling device for dust filter generation at a Ni refinery	
09:20	Neressa Sukha et al., The evolution of the mechanically agitated hopper in Anglo American Platinum	
09:40	TECHNICAL: Martin Lischka, Sampling for Industry 4.0	
10:05-10:30 COFFEE BREAK, POSTER SESSION (Blomsterhaven) & EXHIBITION		
Session 8: Mining/ Minerals / Metals 10:30-12:20 SOUND CHECK 10:00 (when break starts) Caledonien Hall		
10:30	KEYNOTE: Ralph Holmes, Ongoing challenges of representative sampling of bulk mineral commodities	
11:00	Karin Engstöm et al., Understanding sampling variation—a vital aspect of industrial research experiments	
11:20	Felix Tocanas et al., A comparison between conventional blast hole sampling and diamond core drilling for copper grade at the Antapaccay mine	
11:40	Francis F. Pitard, Case Studies using Visman & Ingamells sampling approaches	
12:00	Modisaotsile Nyokong & Willem Slabbert, ISO 13909 compliant contractual payment station coal sampling plant: Process design and equipment selection for chemical, physical and moisture sampling	
12:20-13:30	LUNCH	Grenseløs Restaurant
AFTERNOON SESSION 9: Around the World New Developments/ Going Forward 13:30-17:00 Caledonian Hall		
Session 9: 13:30-15:20 SOUND CHECK 12:20 when lunch break starts		
13:30	KEYNOTE: Dr. Li Huachang, The state of organized sampling work for minerals in China since WCSB9	
14:00	Simon Dominy et. al., Sampling for resource evaluation and grade control in an underground gold operation: a case of compromise	
14:20	Laurance Donnelly, et al., The sampling and phase characterisation of black mass	
14:40	Quentin Dehaine & K.H. Esbensen, Multivariate methods for improved geometallurgy sampling	
15:00	TECHNICAL: Claudia Paoletti & K.H. Esbensen, Framing TOS in risk assessment: A broader perspective for the future—Comparing and contrasting the F² and M³ industry sectors	

15:20- 16:30	COFFEE BREAK & IPGSA General Assembly	Caledonien Hall
16:15 -16:45	Council Meeting (council members only)	Meeting Room 1 st floor
16:45-17:00	Closing Ceremony (revile location for the next conference)	Caledonien Hall

WCSB10 POSTERS

J. Anszyskiewicz, et al., The process of production certified reference materials for silicon industry
J. Dube & K.H. Esbensen, Estimating the heterogeneity invariant using size-density classes—the case of contaminated soil and complex minerals
M. Fromreide & Henne, Smart control of HVAC based on measurements of indoor radon concentration
C. Robben et al., X-Ray Tomography (XCT) for characterisation of particulate materials heterogeneity: Embrace heterogeneity—create value with separation and sorting
S. Russell, Sample preparation according to Ian Devereux: an unofficial guide
S. Russell, Covid 19: Lessons for developing and commissioning new mining technologies
W. Slabbert & M. Nyokong, ISO8685 Compliant contractual ship loading export
B. Svensmark, Applications of Sampling Uncertainty (SU)
B. Svensmark, The extended Gy's formula
B. Svensmark, The Gandalf soil sampling project at former industrial site in Copenhagen, Denmark: Evaluating soil classification reliability
K.H. Esbensen et al., Representative sampling of food and feed materials: A critical need for food/feed safety
K. H. Esbensen and L. Skerning, DS3077—Horizontal Standard revision after 10 years and induction as an ISO Standard

Special Events & Social Program

Tuesday 31 May

06:30- **Early morning swim** (*morgenbad*) 'Wake-Up' Harbour Swim with Gro and Elke
Bring your bathing suit & towel and join in a *refreshing* Nordic tradition and enjoy a warm cup of coffee afterwards! Meet at the entrance to Radisson Blu Caledonien Hotel

08:10- 08:22 **Norwegian folk music** (*folkemusikk*)
Norwegian traditions: Nina Byttingsmyr and Maria Vaaje play hardingsfele (hardanger fiddle) in bunad (folk costumes).
Entrance of Conference hall

18:00-20:00 **Welcome Reception:** Greet old friends and meet new ones in the Skybar at Radisson Blu Caledonien Hotel, overlooking Kristiansand, while enjoying some finger food and drinks.

19:30/20:00 **Dinner out in Kristiansand town at own expense.**

Wednesday 01 June

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15:00-16:30 **By the Beautiful Sea:** Boat trip around the scenic Kristiansand Fjord.
A chance to see all the small outer islands. Limited to 15.
For Plus 1's and anyone interested.

19:00 **Bus to Gala Dinner:** Unless you're a mountain goat, you will want to make sure you are on the bus to the *Mannskapsmessa*, the location for our Gala Dinner located at the top of Odderøya.
Radisson Blu Caledonien Hotel entrance

19:30 **Gala Dinner & Pierre Gold Medal Ceremony: Mannskapsmessa**
Enjoy a spectacular three-course dinner overlooking the beautiful Kristiansand harbour

22:30 **Bus returns** to Radisson Blu Caledonien Hotel **or** walk down the hill to the hotel under the 'light night' summer sky

22:30 - **Nightcap at the Skybar!** Remember, the conference begins at 08:30 on Thursday...

Friday 3rd June

SITE VISIT: we have the pleasure of offering participants a site visit to Glencore Nikkelverk.

08:50 Departure from Radisson Caledonien by shuttle

09:00 Arrival at Nikkelverk

09:15 Welcome to Nikkelverk at auditorium- presentation of company with Q&A

10:30 Guided tour to new copper production facility

11:40 Return to Radisson Caledonien by shuttle

Maximum amount of participants: 30

Sign-up for site visit at WCSB10 registration desk upon arrival.