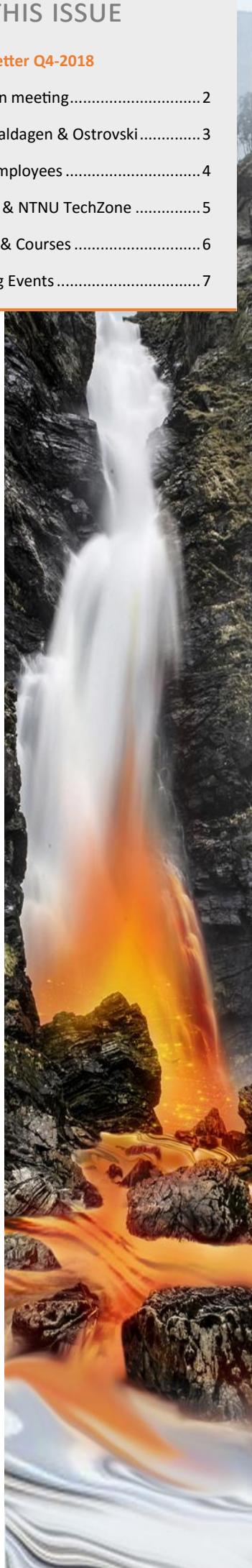
metal production

SFI METAL PRODUCTION

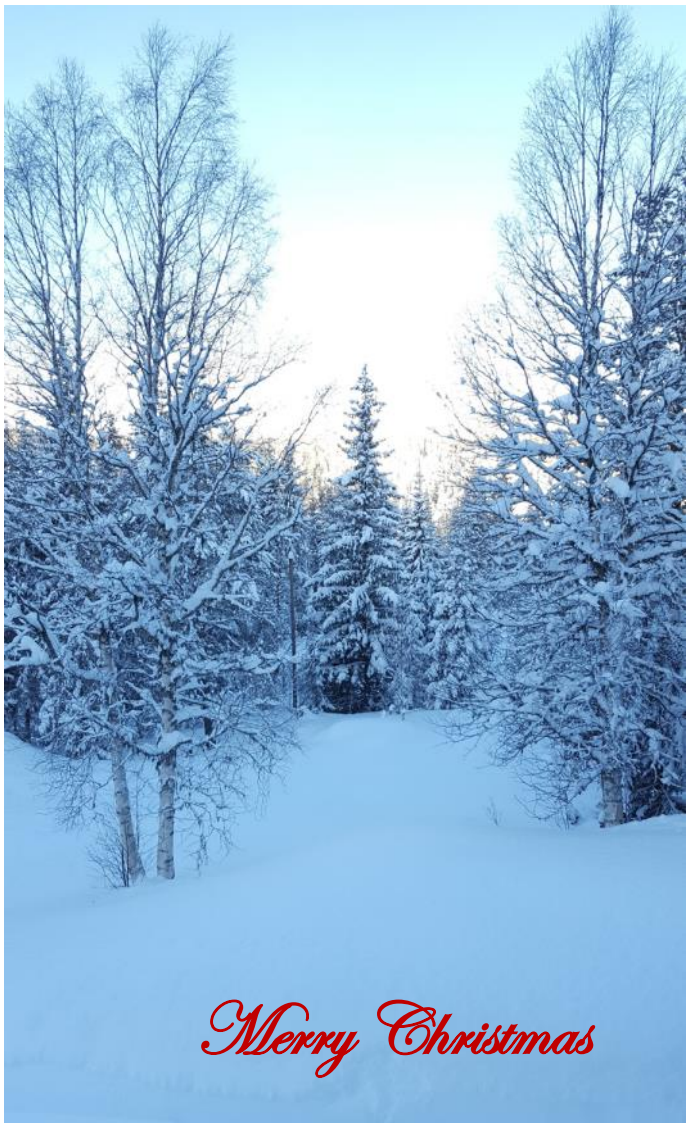
Newsletter Q4/18

In this issue

Newsletter Q4-2018



The centre SFI Metal Production has been running for almost 4 years, i.e. this autumn it was time for the mandatory Midway evaluation. The whole Centre: students, research partners NTNU, SINTEF and NORCE, all nine industrial partners, the Executive Committee and the Scientific Committee have been involved in the process of Midway evaluation. All documents were sent to the Research Council of Norway on December 14th. The next step is the panel visit of two generalists and two specialists at the Centre on March 6th 2019. The midway evaluation process has been instructive, and we have identified both our strengths and improvements. Thank you very much to all contributors who made the Midways evaluation possible to work out!



The management team in SFI Metal Production would also like to take the opportunity to thank the SFI Metal Production family for all collaboration throughout 2018, and we are looking forward to continue working together towards our common goals in 2019.

Merry Christmas & Happy New Year!

Autumn Meeting 2018

SFI Metal Production Autumn Meeting

Markus Reuter, Roger Strøm, Vincent Deborde

Once again, we have arranged an SFI Metal Production autumn meeting with 70 participants from the SFI-partners. Both industry and academia participants seemed to be satisfied with the program and the interesting lectures.

During the first day we were updated on research results for 2018 within SFI Metal Production in three sessions: Aluminium, Si/Mn/Ti and Environment. A lot of results were presented by the researcher working in the Centre, thanks to all of you.

Anne Kvithyld and George Rombach

Worth mentioning this time is the student work "An overview of Norwegian metal production" presented by Leiv Kolbeinsen. Four students have used this summer to update the database for the Norwegian metal industry. The industry participants showed interest for this student work and are looking forward to read the final report.

The second day's focus was on industry, digitalisation and innovation. Thanks to Vincent Deborde (GE Power Digital), Nina Helene Omdahl (Alcoa), Markus Reuter (Helmholtz-Institute Freiberg), Roger Strøm (RCN, Prosess21) and Eirik Manger (Hydro) for interesting and enthusiastic presentations.

At the very last session we focused once more on the innovation potential for the industry in SFI Metal Production. We appreciated that Marit Dolmen (Elkem), Haavard Elstad (TiZIr) and Ketil Rye (Alcoa) emphasized this in their presentations, which was very important for Midway evaluation.

Leiv Kolbeinsen and his 4 summer students

Nina Helene Omdahl (Alcoa)

Erlend Lunnan Bjørnstad at Materialdagen

This year the PhD student Erlend Lunnan Bjørnstad represented SFI Metal Production as a speaker at Materialdagen.

Our annually presentation at Materialdagen is a part of our work for recruitment of students to SFI Metal Production and the REM-group (Resources, Energy & Environment) at NTNU.

PhD candidate Erlend Lunnan Bjørnstad did a perfect job and gave the student audience an honest and enthusiastic insight into the (hard) life as PhD candidate.
Thank you, Erlend!

Guest visit of Emeritus Professor Oleg Ostrovski

SFI Metal Production had the pleasure to have Emeritus Professor Oleg Ostrovski as a guest from September to November this year. These month Oleg has been working together with our PhD candidates, been involved in several projects, been opponent at NTNU and worked with the Midways evaluation. Oleg is Emeritus Professor at UNSW Sydney and his major interests are in the field of pyrometallurgical technologies for minerals processing, iron, steel, ferroalloy-making and areas of research, including thermodynamics, kinetics and mechanisms of metallurgical reactions; properties of molten metals and slags; reduction, smelting, refining processes and environmental issues in pyrometallurgy.

Oleg has been one of four members in our Scientific Committee since the start up in 2015. His period as a member of Scientific Committee is finished this year, and we have utilized his knowledge and competence, especially during his two months stay in Trondheim. We are grateful to have Oleg as member of Scientific Committee for 3 years and want to thank him for the time he has used on SFI Metal Production.

Thank you, Oleg!

New Employees

The Innovation Manager at SFI Metal Production has started

NTNU has just adopted a new strategy for innovation and the last year employment of 15 innovation managers has been accomplished to help transforming more research into practice. The positions form part of the NTNU Strategic Programme for Knowledge-Based Innovation, and SFI Metal Production got funding for one of these Innovation Managers to focus on innovation within Metal Production and Material Technology.

The first of December, the Innovation Manager Finn Robert Müller started at NTNU and SFI Metal Production. He is educated as an engineer and have both financing and innovation as supplementary educations. Finn Robert has experience from several companies, among others Hafslund Metall, Norks Hydro and SINTEF. His last employment was as managing director at Tommen Gram Folie AS.

We are looking forward to work with a dedicated person who brings innovation into focus!

A new PhD at the Centre!

Hossein Salehi is our fourth PhD candidate who started to work at the Centre this year. The title of Hossein's project "Smelting phenomena of ilmenite and characteristics of the produced high titania slag". This project is co-funded by SFI Metal production and Department of Materials Science and Engineering, and Associated Professor Jafar Safarian is his supervisor.

Background and subject of Hossein's PhD project:

In the Tyssedal plant in Norway, ilmenite is pre-reduced in a rotary kiln and then fed into an electric arc furnace for smelting, where a high-titania slag is formed and floats on top of a molten iron bath. During the feeding into the smelter, the pre-reduced ilmenite is exposed to the high-temperature atmosphere of the arc furnace and is melted down while it is surrounded by the liquid slag.

Studying the melting behaviour of both ilmenite and pre-reduced ore, in particular with the liquid slag, is the objective of this PhD research. The leachability of the high titania slags produced under different conditions is the other subject that will be studied. The outcome of this project will give a better understanding of the ilmenite smelting phenomena, the process thermochemistry and the further application of the slag.

Guest PhD is leaving Norway and the cold winter

This year, Leandro Gustavo Mendes de Jesus has stayed at NTNU and SFI Metal Production. He arrived in the middle of March and is now, in December, leaving Norway. Leandro will soon finish his PhD degree back home in Brazil at UFRGS - Universidade Federal do Rio Grande do Sul. Leandro's supervisor in Brazil is Prof Carlos Otávio Petter and Prof. Merete Tangstad (NTNU) is his co-supervisor.

Leandro, what have you done during your months in Trondheim? "I worked in the pre-reduction of manganese briquettes made of tailings of manganese ore production (Urucum ore). During my time in Norway I performed pre-reduction tests in DisVaDri furnace which simulates SAF furnace, regarding heating and atmosphere. As comparison I also did the same tests for Comilog and Assmang ore which are used in Norwegian ferroalloy industry."

Leandro (right) together with Vincent (postdoc) and the guest researcher Didier at the end-of-term dinner

By the way—have you read some articles at NTNU TechZone

What is NTNU TechZone? NTNU TechZone is a blog about technology and natural sciences at the Norwegian University of Science and Technology (NTNU), **https://www.ntnutechzone.no**

Nye støvsensorer kan gi viktig miljøinfo for noen hundrelapper, written by PhD student at SFI Metal Production Håkon Aleksander Hartvedt Olsen. https://www.ntnutechzone.no/2018/12/nye-stovsensorer-kan-gi-viktig-miljoinfo-for-noen-hundrelapper/

Some other of interest:

Fra sand til smarttelefoner: Ett steg mot mindre avfall! Av Karin Fjeldstad Jusnes (PhD student in the HighTempQuartz project) «Hvordan oppfører forskjellige kvartstyper seg når de varmes fra 20 til 1500 °C? Svaret kan hjelpe oss til å produsere materialer med mindre avfall» https://www.ntnutechzone.no/2018/02/fra-sand-til-smarttelefoner-ett-steg-mot-mindre-avfall/

Viktige krystaller, av Espen Undheim (PhD student at the previous FME SOL). «Krystallene som dannes når man produserer silisium til bruk i solceller, er avgjørende for solcellenes kvalitet. Men hva skjer når krystallene dannes, og er det mulig å påvirke prosessen?» https://www.ntnutechzone.no/2018/04/viktige-krystaller/

AWARD to Raghed Saadieh, Elkem

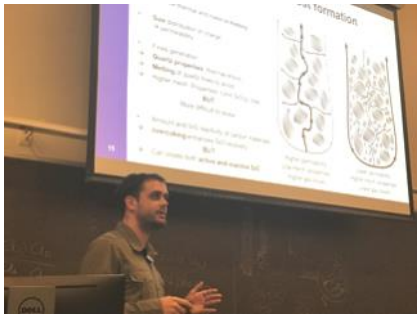
This autumn Raghed Saadieh got Elkem's forskningsfond (EFF) award. It is an award both for academic performance as well as contributing to the non-academic side of the student life. EFF's reasons for giving Raghed this award: "Raghed Saadieh er en av de viktige studentene som holder studentgruppa sammen, som både faglig og sosialt hjelper nye medlemmer inn og tar ansvar. Han er i tillegg den første studenten som går i dybden på FeSi prosessen som har vært mer eller mindre neglisjert i forskningskretser i mange år. Han har i denne tiden simulert prosessen i labskala og sett hvordan krateret utvikler seg i FeSi ovner». Congratulations Raghed!

Raghed is an industrial PhD employed at Elkem and he is doing his doctoral research project at NTNU with Professor Merete Tangstad as supervisor.

Autumn = Courses

During the first half of October we carried out four courses for students, PhD candidates and industrial persons. The responsible, Merete Tangstad, Mertol Gökelma, Jafar Safarian are doing very important knowledge promotions by arranging theses courses. A lot of persons have made lectures and hopefully these courses increased the knowledge of the participants. The four courses carried through this autumn were:

Silicon Refining short course
Silicon production short course
Manganese fundamentas short course
Aluminium refining & recycling short course



Coming events

January 18, 2019
Nicholas Smith will defend his Doctoral Thesis “Methods of Oxidation Inhibition for Al-Mg Alloys”, Trondheim, Norway

March 6, 2019
Midway evaluation, panel visit at SFI Metal Production, Trondheim Norway

March 10-14, 2019
TMS 2019 Annual Meeting & Exhibition, San Antonio, Texas

April 24-25, 2019 S
SFI Metal Production Spring Meeting, Trondheim Norway

May 15-16, 2019
Dross seminar, Trondheim Norway

October 7-10, 2019
INTPART CaNAl meeting and 2nd Summer School
Université Laval, Quebec City. I
In cooperation with REGAL student day https://www.regal-aluminium.ca/en/jer-en/jer-2019/

November 5-6, 2019
SFI Metal Production Autumn Meeting, Trondheim Norway

metal production

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