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IEEE SE MN2019-Q4

Editorial

The activities of IEEE Sweden section has finally come to an end for the year 2019. We are encouraged with the rate at which members participated in chapters activities. It is an indication that the year 2020 will be greater. We are humbled but shall not fumble as we continue to find ways of increasing our membership in all sectors. IEEE tools online and on-ground are readily made available to us to remain efficient, industrious and marketable. According to Nathan W.

Dougherty, American civil engineer, "The ideal engineer is a composite ... He is not a scientist, he is not a mathematician, he is not a sociologist or a writer; but he may use the knowledge and techniques of any or all of these disciplines in solving engineering problems" Therefore, excellence and integrity in our engineering practice and society participation will always remain our main focus. Come 2020, we are committed to delivering as entrusted the benefits of membership to members of IEEE Sweden

Section. The board remains grateful to committed members. We will continue to put our efforts to help with your career and personal development. This Newsletter is subject to nonstop improvements and aims at sharing information with IEEE members. Hence, we kindly ask for contributions, feedback and involvement from our readers. Please submit to the Newsletter Editor, Dr. Celestine Iwendi celestine.iwendi@ieee.org

A message from the Sweden Section Chair

Dear IEEE Member,

Season's greetings, I hope you got the much-deserved rest during the holidays and have had a fantastic start to the new year already.

We ended 2019 on a very high note, with the section getting a lot of focus and attention in Scandinavia and in the region 8, thanks to the IEEE Nordic SYP Congress, an event that brought all the Nordic and Baltic sections together. The event was co-hosted with Finland section on a boat between Stockholm and Helsinki. More on the event on page 4.

The different chapters organized numerous events with the NMDC being one of them, which focused on Women in innovation and Sustainability.

We want to continue the good tempo we have built, in the coming years also. On one hand- we want the industry relations, chapter collaborations to get better. On the other, we want to empower students and young professionals. All this in preparation for the biggest event of IEEE Region 8- Students and Young Professionals Congress that will happen in Gothenburg between 5th and 8th August 2020, gathering more than

400 R8 members. We hope to be having the IEEE CEO, the R8 Director and other dignitaries coming down as well. Yet again, this is not possible without your help and support.

I look forward to working with you to make this year better than ever.



Samarth Deo
Chair IEEE Sweden Section

Nobel lectures & luncheon on 13 Dec 2019 at Uppsala

On December 13th, 2019, Uppsala University played host to a series of Nobel lectures, followed by a luncheon in the Uppsala Castle. The session commenced with Sine Wrede receiving the Swedish Chemical Society award for 'Best Master Thesis' in Chemistry, with congratulations from the Nobel Laureates. The Nobel Prize in Chemistry 2019 rewards the development of the lithium-ion battery, and was awarded jointly to **John B. Goodenough, M. Stanley Whittingham** and **Akira Yoshino**. <https://www.nobelprize.org/prizes/chemistry/>.



voltages. In 1985 Akira Yoshino created the first commercially viable lithium-ion battery.

Prof. **Michel Mayor**, one of the Nobel Laureate in Physics, presented the research he and Didier Queloz did at the Haute-Provence Observatory in France. By using e.g. Doppler shifts they were able to detect planet 51 Pegasi b (comparable with Jupiter). In October 1995 they announced the first discovery of an exoplanet outside our solar system. This discovery started a revolution in astronomy and over 4,000 exoplanets have since been found in the Milky Way.

IEEE Sweden Section was present at the lectures and the luncheon by Mats Edvinsson, Sweden Section Board. We were grateful to get opportunities to chat with Stanley Whittingham and other guests.

John Goodenough and Akira Yoshino have a very strong background in IEEE: They are two of the three co-recipients of the **2012 IEEE Medal for Environmental and Safety Technologies**.

Prof. **Stanley Whittingham** outlined the development of the lithium-ion battery. He started to research superconductors in the 1970's and discovered an extremely energy-rich material. He used this material to create an innovative cathode in a lithium battery, which at a molecular level has spaces that can house – intercalate – lithium ions. Later on, John Goodenough made an important breakthrough on cathodes by demonstrating higher

IEEE NMDC2019 Special Event on Women in Innovation and Sustainability

On 2019-10-28 an IEEE Photonics Society (IEEE PS) funded event on **women in innovation and sustainability** was held in The Brewery Conference Centre Stockholm, Sweden <https://www.nmdc2019.conf.kth.se/women-in-innovation-and-sustainability/>.

The event was arranged as part of IEEE NMDC2019 <https://www.nmdc2019.conf.kth.se/>, which is the 14th IEEE Nanotechnology Materials and Devices Conference. It brings together key researchers and young professionals including postdoc, PhD students from every sector related nanotechnology science and research, which has worldwide impact in the field. The goal of the event is to promote personal and professional growth for women-in-STEM. Four top female leaders/scientists were invited to share their personal successful experience on insight scientific frontiers, technology innovation strategy planning/processing and entrepreneurship culture with the participants. The titles of their talks are listed as follows:

1. **Matilda Ernkrans**, the Swedish Minister of Higher Education and Research, “Development of Higher Education Institutions – our Feminist Government at work”



2. **Charlotte Karlsson**, director of ICT division RISE, “Leadership in sustainability and innovation – how do we at RISE support Swedish Society?”



3. **Linda Lyckman**, CTO of SSC, Swedish Space Corporation, “Why diversity matters in the space industry”



4. **Luisa Torsi**, University Bari, Italy, one of plenary speakers of IEEE NMDC 2019, “How not to STEM women’s potential?”

The event was chaired by Magnus Svensson (Vinnova Smart Electronics System program) and Prof. Qin Wang from RISE/KTH, also a board member of IEEE PS Swedish Chapter. About 100 people participated in the event. It is highly appreciated that the president of IEEE PS Prof. Chennupati Jagadish from Australian National University attended the event and gave his warm encouragement to the organizers of this event. (Pictures from Gote Fagerfjall)

The IEEE Nordic SYP 2019 sailed on a wave of sustainability

This was the first big congress our board members would organize, so when IEEE Sweden and Finland Presidents, Samarth and Toni first told us about their idea to co-host the IEEE Nordic SYP it seemed like a great idea. Help organizing from our Finnish counterparts and sharing the workload and stress across two affinity groups instead of one. Then came the kicker - we would be hosting on a cruise ship.

I quickly sent out the idea to our board's WhatsApp group and everyone was super excited about the idea. Three days, two countries, possibly the first SYP congress in IEEE history on a boat, duty free drink prices - sure why not!

The Silja Line Symphony that ferried the IEEE Nordic SYP Congress 2019 between Stockholm and Helsinki



The theme we chose for the event was sustainability, so we tried to embrace sustainability in all our decisions. Our lunch was sourced from a sustainable food company, even our event hoodies were bought from a sustainable clothing company. The hoodies ended up providing the first lesson of hosting on a cruise. As the boat pulled out from Stockholm on Friday evening, we realized a small label on our box of hoodies with tiny little text that said, "box 1 of 3". A quick call revealed that the other two boxes were sitting in a post office in Stockholm! Of course, we just collected the other two boxes and distributed them when we returned for talks from industry experts on sustainability in Stockholm on Sunday but the first lesson was learned - your ability to improvise and react is greatly diminished when hosting on a boat!

Day 1 was a gentle introduction to the congress, but one of my favorite days as it featured most of the people who had been instrumental in supporting the SYP. There was an introduction from Samarth Deo, the chair of the IEEE Sweden board who had donated countless hours supporting, helping and advising us throughout the entire planning phase. Next were two talks from the IEEE Young Professionals, featuring Rafal Sliz and Sara Barros - who

From left - Ievgen Pichkalov, Anna Elżbieta Burek, Maciej Borówka, Dr. Andrejs Romānovs



also donated so much of her time advising and trying to help our affinity groups. The last speaker of day 1 should have been George Papadimitriou from IEEE Student Activities Committee but had to unfortunately cancel due to work at the last minute. Luckily for us though we were blessed with a more than able replacement - Region 8 Vice Chair and R8 SAC Chair Maciej Borówka - who picked up where George left off and was a constant source of support throughout the event.

We docked in Helsinki on day 2 - a little worse for wear after a night of heavy karaoke! We met Jenni, chair of YP Finland at the docks and made our way to Aalto University. We were welcomed to Aalto University by Mahdi Pourakbari Kasmaei, who went on to give a talk about Electric vehicles - the benefits and challenges. The talk centered on how power grids will have to

adapt, and adapt quickly, to meet the increasing demand for electricity as the number of EVs introduced to the grid increases.

This was followed up by Joel Kärkkäinen and Rebeccah Kimotho who spoke about Uninterruptible Power Supplies, and how vital they are - not only for ensuring data centers are always up and running, but for the entire Scandinavian power grid. They described how one of Eatons UPS had helped keep the power grid up when a reactor in the grid became unavailable. Next our host Jenni gave a talk about the company she works for Sandvik, and the challenges encountered moving towards a fully autonomous mining facility. One challenge was access to

a network when mining deep underground and she spoke about how Sandvik had worked with Nokia to setup a small network underground to enable communication between the autonomous mining machines. Which provided a nice segue to the final speaker in Helsinki, Dmitry Petrov from Nokia, who provided an eloquent talk entitled "5G Network Automation and ML".



Customary group selfie in Aalto University

Then came the second lesson of hosting on a cruise. There is so much time lost to transfers. It took one hour intervals to travel from the airport to the port in Stockholm, the port in Helsinki to Aalto University, etc. and as we were sitting in a packed tram at 16:20 Saturday evening, on our way back to the boat (which stopped boarding at 16:30) it did add a little bit of extra stress to proceedings! Thankfully we all made it back on board and set sail back to Stockholm. The stabilizing mechanisms on the boat had their work cut out for them on the way back as the seas got a bit stormy. The congress room we had hired was located at the very front of the boat, and despite the sound of the waves crashing against the bow Ana Cigarán Romero, the R8 chair of WIE, managed to steer us through a talk about Women Engineers and Equality. The talk centered on the inequality between men and women in engineering, and how to transform challenges into opportunities as a woman engineer in the career.



Ana Cigarán Romero speaking onboard the Silja line Symphony

The final talk of day 2 went to IEEE Membership Development and Ievgen Pichkalov and Dr. Andrejs Romānovs. They gave an exciting talk on the Benefits of IEEE membership and IEEE Student branch and chapters' benefits and structure.

Day 2 finished with our Gala dinner and

celebrating the Nordic SYP 2019 by taking advantage of the novelty of gaining an extra 2 hours due to traveling between time zones at the same time as a country switched to daylight saving time - meaning a 26-hour day 3.

The final day. Our weary gang landed in Stockholm in desperate need of rest and coffee. Luckily there was not only a steady supply of coffee, but also quality speakers who gave engaging and passionate presentations across a host of topics.

Women in Engineering began with talks from Sweden WIE Chair Elena Vasileva, and R8 WIE chair Ana Cigarán Romero giving talks on the difficulties and challenges in increasing membership in WIE, and how they addressed the issues.



The sustainability theme then returned with Waled Elsayed from Volvo Cars. Waled presented Volvo's approach to Electric Vehicles and Autonomous Cars. Waled spoke passionately about the inroad's Volvo cars has been making in autonomous driving cars and electric

vehicles.

The final presentation before lunch was from Professor Carl-Mikael Zetterling from KTH. His talk on extreme environment electronics for Venus focused on silicon carbide electronics that can withstand the extremely harsh climate on Venus. Being able to send sensors and probes to Venus to map and model the climate there could help us learn about our own climate.

After lunch Dr.El Houssein Chouaib Harik took to the podium to discuss his research at the center for precision agriculture aimed at reducing fossil fuels in agriculture. He described how the fleet of autonomous tractors they developed worked together to accomplish agricultural tasks at a fraction of the carbon footprint cost that the fossil fueled tractors usually used on a farm create.



research currently ongoing in the area.

Given that a lot of the electronics used to reduce our carbon footprint are based around using sensors to learn and improve their efficiency and performance, we were lucky to have Celestine Iwendi, an associate professor in China, speak about "Securing the Internet of Intelligent of Things using Ai (INTRIXIT)". The security of Internet of Intelligent of Things (IIoT) and 5G/6G Security Connectivity of the Cyber Physical systems is now a big research issue, and Celestine gave a presentation on the methods and

A short break for a traditional Swedish fika and we had our final three speakers of the congress. Ambra Sannino from DNV spoke of her company's work, and their predictions for how the power grid will look based on their Energy Transition Outlook report.

We then that Gustav Frid, strategic environmental advisor at Vattenfall, talk about their efforts to move to fossil free living within one generation. The presentation was about Vattenfalls increasing focus on renewable energy sources and meeting the demand of moving to fossil free living. The final presentation by Ruben DeMoore, chief compromise officer, was on the most pressing challenges and opportunities that can be found at the intersection of engineering and sustainability. He spoke about the perceived incompatibility between technical progress, economic growth, and sustainable development, which leads to polarization and friction in society.

This was the first Students and Young Professionals Congress that our current board have undertaken, and it was such a great experience on so many levels. We had to learn on our feet how to manage event finances, market and promote, contact and interact with merchandise suppliers and catering companies, present ourselves to sponsors to try and secure funding, and many other soft skills that don't normally enter our engineering careers. The company I work for Syntronic has also supported me 100% during this process, even agreeing to be the event sponsor, helping make the event possible, but the absolute best experience gained from hosting the event was meeting the attendees themselves. When you enter the SYP planning tunnel and are focusing on countless tasks that need to be carried out, you tend to forget that at the end of the tunnel you get to spend the weekend with like-minded volunteers from all across the world. Everyone who attended the event contributed to making it better for others and it was a privilege to be among so many bright and driven engineers.



Upcoming Events in the section

1. **CV Workshop Webex featuring Alberto Lorente Leal from Spotify**
Spring 2020 Coming soon
2. **Women-in STEM event**
18th May, 14.00 – 20.00
3. **IEEE Region 8 Students and Young Professionals Congress – Goteborg 2020**
5th Aug to 8th Aug 2020



CERTIFICATE OF RECOGNITION

The IEEE Member Recruitment and Recovery Committee recognizes

Samarth Deo

For outstanding achievement in member recruitment for the Sweden Section during the 2019 membership year.




Andrejs Romanovs
Chair, 2019 IEEE Member Recruitment
and Recovery Committee

The Chair and membership development officers received a certificate of recognition for the Sweden Section for outstanding achievement in member recruitment in the section during 2019.