

# Swedish System-on-Chip Conference Celebrates Tenth Anniversary

## *Focuses on Radio Challenges*

The tenth Swedish System-on-Chip Conference (SSoCC) took place on 3–4 May in mid-eastern Sweden, about 40 km from Linköping, amidst leading IC companies such as Ericsson, SP Devices, Huawei, Catena, Cadence, Acreo, Zarlink, and St. Jude Medical. The conference was organized by the Sweden Chapter of the IEEE Solid-State Circuits Society with support from the Department of Electrical Engineering at Linköping University, an innovative and modern institution that hosts several strong research groups focusing on devices, circuits, and telecommunications research.

Four speakers delivered invited remarks on topics related future radio challenges, the conference theme:

- Prof. Sjöland surveyed recent developments in switched mode power amplifiers, including polar and Cartesian architectures using com-



bination of different envelope modulation techniques such as PWM, LINC, and power supply modulation.

- Prof. Ryynänen focused on cognitive radios that make better use of the available frequency spectrum. In his talk, he reviewed sensing radio receiver challenges (such as wideband operation and high linearity of the RF part and wide tuning range and fast scanning in the PLL design) and detailed requirements for spectrum sensing and available methods for determining free resources. He stressed the need for more innovation on both

system and circuit levels in this area.

- Prof. Syväjärvi addressed fabrication and challenges of new electronic materials: Key challenges beyond the silicon era are to identify viable CMOS compatible processes, edge, and interface passivation control to form structures with geometries suitable for devices. Graphitic materials, such as graphene with an electron mobility about 100 times higher than for silicon, have the potential for circumventing many of the integration challenges that face carbon nanotube technology for fabricating high mobility planar devices, although he said there is still much work needed in this area.
- Dr. Rolf Sundblad gave a historical overview of his experience in IC technology and design from 1980 to the present.

Thirty-eight technical papers, presented in parallel sessions, complemented the talks by providing

Digital Object Identifier 10.1109/MSSC.2010.938300



**Prof. Henrik Sjöland**, director of the Ultra Portable Devices Research Program, Lund University, "Switched Mode Transmitter Architectures"



**Prof. Jussi Ryynänen**, Helsinki University, "Cognitive Radio—The Spectrum Sensing Challenge"



**Prof. Mikael Syväjärvi**, Semiconductor Materials Division at Linköping University, "Graphene—A High Speed Candidate"



**Dr. Rolf Sundblad**, CEO of Cognicatus AB and AnaCatum Design AB, "Developing a Consumer Market Mixed-Signal SoC as a Small Fabless Company"



Sweden Chapter Chair Svante Signell (first from left sitting), Vice Chair Jerzy Dabrowski (standing behind third from left sitting), and local conference support Ted Johansson (fifth from left sitting).

an overview of the wide range of SoC-related research going on in Sweden, including the latest progress in the analysis, modeling, and design of A/D converters, mixed signal systems, RF circuits and systems, nanotechnologies, digital filters, and system architectures.

The Best Student Paper and Presentation Award was presented to Timmy Sundström, C. Svensson, and

A. Alvandpour of Linköping University for their paper "A Single-Channel, 2.4 GS/s, 4.7 ENOB at Nyquist, Pipeline ADC in 65 nm CMOS."

SSoCC has provided a forum for inspiration and networking among IC designers, companies, Ph.D. students,

***SSoCC has provided a forum for inspiration and networking among IC designers, companies, Ph.D. students, and senior researchers working in Sweden on different aspects of SoC design since 2000.***



Best Student Paper and Presentation Award winner Timmy Sundström (right) receives his prize from Award Committee Chair Prof. Kjell Jeppson.

and senior researchers working in Sweden on different aspects of SoC design since 2000. The conference always takes place close to the main Swedish technical universities: Royal Institute of Technology, Chalmers University of Technology, Lund University, and Linköping University (LiU). In 2006, the SSCS-Sweden Chapter took over the organization and sponsorship of the conference. The organizing committee has consisted of the Sweden Chapter board with additional local support from Ted Johansson, Huawei/LiU. Next year, the 11th SSoCC will be arranged with local support from Chalmers University, Gothenburg.

For more information, please visit [//sscs.eit.lth.se/ssocc2010/](http://sscs.eit.lth.se/ssocc2010/) for SSoCC and [//www.ek.isy.liu.se/ieee-sscs/](http://www.ek.isy.liu.se/ieee-sscs/) for activities in the Sweden Chapter.

—*Svante Signell, Chair,  
Ted Johansson, Information Officer,  
Martin Anderson, Secretary,  
IEEE SSCS Sweden*