The 12th International Nanotech Symposium & Nano-Convergence Expo

NANO KOREA 2014

July 2 - 4, 2014 | COEX, Seoul, Korea

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Nanotechnology, the Engine of Creative Economy

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NANO KOREA 2014
Symposium Secretariat

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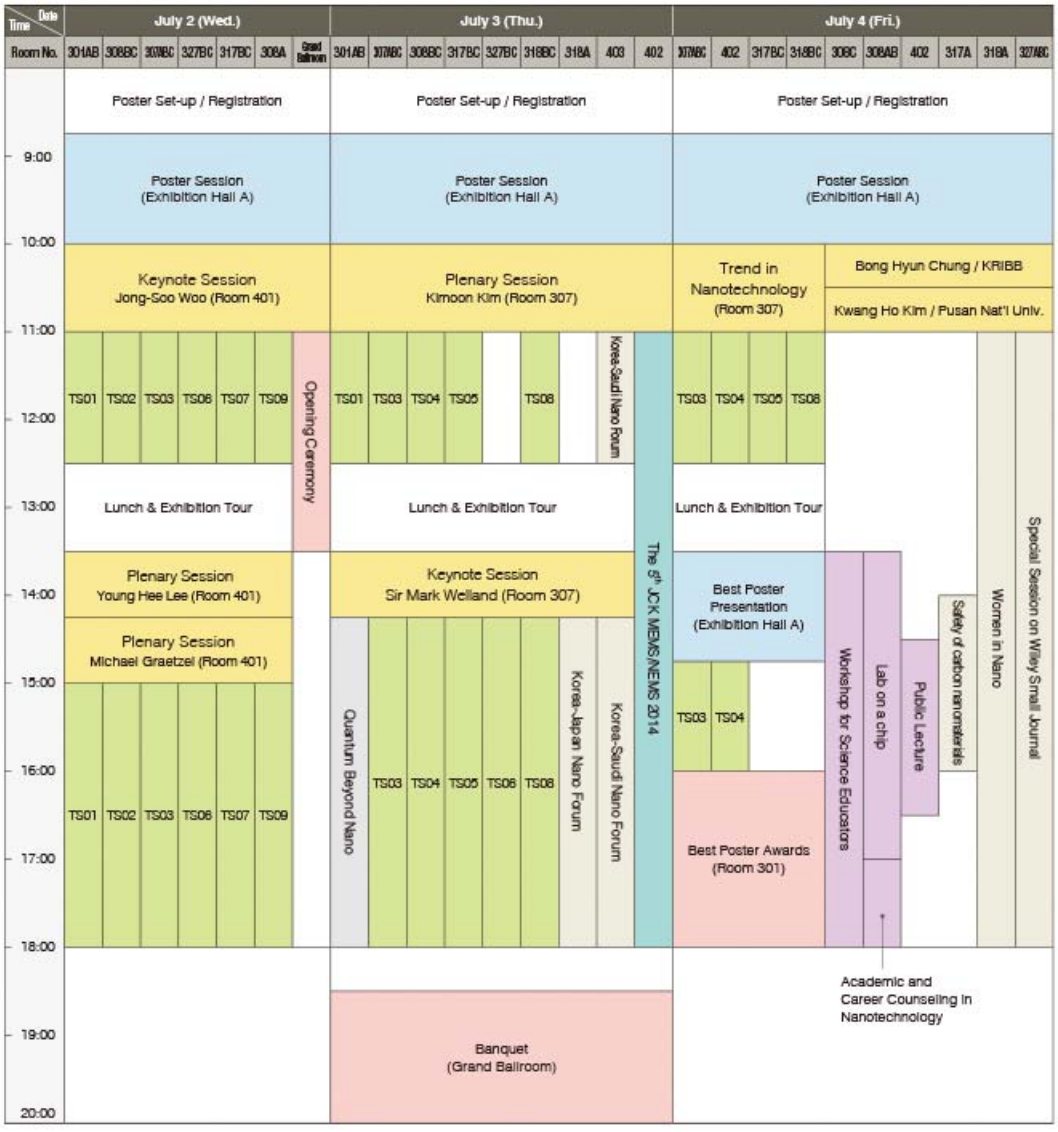
Program at a Glance



TS : Technical Session

TS01 Nano Electronics and Circuits
TS02 Nanophotonics & Plasmonics
TS03 Nano Materials & Processings
TS04 Nano Fabrication & Measurement
TS05 Nanobiotechnology & Nanomedicine
TS06 Nano Energy Conversion & Storage
TS07 Nano Safety & ELSI
TS08 Nano Carbon Technology
TS09 Nano Convergence Technology Industrialization

* This schedule is subject to change, please visit the website for updated schedules.

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- Main
- Greetings
- Committee
- Sponsors
- Program at a Glance
- Keynote & Plenary Session
- Trend in Nanotechnology
- Technical Session
- Special Session
- Public Session
- Satellite Session
- Search

TS02. Nanophotonics & Plasmonics

Invited Speakers | Oral Presentation | Poster Presentation

Choon-Gi Choi 최춘기 (ETRI, Korea) CV
Nanocarbon-based Plasmonic Devices

Woo-Young Choi 최우영 (Yonsei Univ., Korea) CV
Si Photonics for More-than-Moore Si Electronics

Byoungho Lee 이병호 (Seoul Nat'l Univ., Korea) CV
Plasmonic beam steering and selective focusing with nano-slits

Ki-Dong Lee 이기동 (Obducat Technologies AB, Sweden) CV
Nanoimprint lithography : A tool for nanophotonics

Graham T Reed (Univ. of Southampton, UK) CV
Near infrared and the mid infrared Silicon Photonic devices

Yan Zhang (Capital Normal Univ., China) CV
Metasurface based super thin devices for full vector field modulation

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Si Photonics for More-than-Moore Si Electronics

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The most successful application of nano technology is arguably present-day Si electronics technology. Nano-scale Si MOSFET devices having dimensions in a few tens of nanometers are routinely and very reliably produced in massive commercial scales. Highly intelligent yet affordable electronics systems that are based on integration of more than billions of such nano-scale devices are widely used in our daily lives for computation, communication, and entertainment purposes. In fact, for many of us, life without such electronic systems is simply unimaginable.

The success of Si electronics technology can be attributed to two technological approaches: scaling and integration, which are well expressed by Moore's law. But, recently, there is a growing concern that Moore's law as we know now may not be sustained much longer. This is a profound concern because it may signal changes the paradigm of present-day Si technology and can have great impacts on the ecosystem of the modern information technology. No doubt every effort is being made by great many researchers in order to sustain Moore's Law as close to as what it has been. One group of such efforts is classified as More-than-Moore in which new technological elements that have not been used by conventional Si electronics are introduced into Si technology in order to make Si electronics sustain its growth. Si photonics belongs to this group.

Why does electronics need photonics? Because with ever-increasing integration levels in electronic systems, interconnects between systems, boards, chips, or within chips are becoming more and more crowded and, often, become one of the key elements limiting the entire system performance. In addition, conventional metallic wires used for interconnects are having hard time in providing required performances due to their intrinsic losses at high frequencies. Photons guided in dielectrics are simply much better in delivering signals faster and longer than electronics in metals. But in order to successfully introduce photonics into electronics, photonic devices have to be realized on Si platform and capable of being integrated with electronics. Recently, there are many breakthroughs in Si photonics that partially satisfy above requirements. In this talk, I will review some of these and introduce some recent developments in Si photonics in the High-Speed Circuits and Systems Laboratory at Yonsei University.