



# 2003 Annual EDS AdCom Report

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**Jim Hutchby**

Semiconductor Research Corporation

Chair, Electron Devices Society Technical Committee on VLSI  
Technology and Circuits



## Topics...

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**PURPOSE OF COMMITTEE**

**MEMBERSHIP**

**2003 ACCOMPLISHMENTS**

- Initiation of compact modeling workshop
- Proposal for special issues in TED

**PLANS FOR 2004**

**New Chair**



## Agenda...

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- **Annual report (Jim Hutchby)**
- **Outstanding Action Items**
- **Ideas for future activities**
  - Specific ideas
  - Responsible committee member
- **Identify new candidate members for the committee**
- **Elect new Chair**



# VLSI TECHNOLOGY AND CIRCUITS COMMITTEE

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## **PURPOSE**

To serve EDS members through enhanced technical exchanges

- Initiate topical workshops of current interest (attached to existing conferences or start new ones)
- Special issues for major publications (e.g. T-ED)
- Panel session topics for major conferences
- Special sessions for major conferences



# VLSI TECHNOLOGY AND CIRCUITS COMMITTEE

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## **CHAIR**

- James A. Hutchby, Semiconductor Research Corporation, Research Triangle Park, NC, USA (Jan. 1, 2002 – Dec. 31, 2003)(Step Down)
- Bin Zhao, Skyworks Solutions, Inc., Irving, CA, USA (Jan. 1, 2004)

## **MEMBERS**

- Ilesanmi Adesida, University of Illinois, Urbana, Illinois, USA
- Ken-ichi Goto, Fujitsu Labs Ltd., Atsugi, Japan (Step Down)
- Jim Hutchby, Semiconductor Research Corp.
- Jason Jenq, UMC, Process & Technology Division, Hsinchu, Taiwan
- Mark E. Law, University of Florida, Gainesville, FL, USA
- Kwyro Lee, KAIST University, Taejon, Korea



# VLSI TECHNOLOGY AND CIRCUITS COMMITTEE (cont'd)

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## **MEMBERS**

- Lalita Manchanda, Agere Systems, Murray Hill, NJ, USA (Step Down)
- Willy M. Sansen, ESAT-MICAS, KU Leuven, Leuven, Belgium (Step Down)
- Huiling Shang, IBM, T. J. Watson Research Center, Yorktown Heights, New York, USA
- S.C. Sun, Chartered Semiconductor, Singapore (Step Down)
- Akira Toriumi, The University of Tokyo, Tokyo, Japan
- Albert Wang, Illinois Institute of Technology, Integrated Electronics Lab, Dept. of ECE, Chicago, Illinois, USA
- Jeffrey J. Welser, IBM Technology Group, #3203, Somers, NY, USA
- Reinout Woltjer, Philips, Philips Research Laboratories, Eindhoven, The Netherlands
- Xing Zhou, Nanyang Technological University, Singapore (Step Down)
- Bin Zhao, Skyworks Solutions Corp., Irving, CA, USA



# IEEE Electron Devices Society VLSI Technology and Circuits Committee

Term started <b>2000</b> (Step Down)	Term started <b>2001</b>	Term started <b>2002</b>	Term started <b>2003</b>
<p><b>Lalita Manchanda,</b> Agere <b>Ken-ichi Goto,</b> Fujitsu <b>S.C. Sun,</b> Chartered Semiconductor <b>Willy Sansen,</b> ESAT-MICAS <b>Xing Zhou,</b> Nanyang Technological University</p>	<p><b>Mark Law,</b> U. Florida <b>Jeff Welser,</b> IBM <b>Ilesanmi Adesida,</b> U. Illinois <b>Jim Hutchby,</b> SRC <b>Akira Toriumi,</b> U Tokyo <b>Kwyro Lee,</b> KAIST</p>	<p><b>Jason Jenq,</b> UMC <b>Huiling Shang,</b> IBM <b>Albert Wang,</b> Illinois Institute of Technology <b>Reinout Woltjer,</b> Philips</p>	<p><b>Bin Zhao,</b> Skyworks Solutions Corp.</p>



# IEEE Electron Devices Society VLSI Technology and Circuits Committee

<b>Term started 2001</b>	<b>Term started 2002</b>	<b>Term started 2003</b>	<b>Term started 2004</b>
<b>Mark Law,</b> U. Florida <b>Jeff Welser,</b> IBM <b>Ilesanmi Adesida,</b> U. Illinois <b>Jim Hutchby,</b> SRC <b>Akira Toriumi,</b> U Tokyo <b>Kwyro Lee,</b> KAIST	<b>Jason Jenq,</b> UMC <b>Huiling Shang,</b> IBM <b>Albert Wang,</b> Illinois Institute of Technology <b>Reinout Woltjer,</b> Philips	<b>Bin Zhao,</b> Skyworks Solutions Corp	<b>Yanhen Li,</b> Tsinghua University <b>Joe Brewer</b> University of Florida <b>Jamal Deen</b> McMaster University





## 2003 ACCOMPLISHMENTS

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- Recruited 3 new members
  - 8 US, 2 Japan, 1 Korea, 2 Singapore, 1 Taiwan, 2 Europe – 2003
  - 8 US, 1 Japan, 1 Korea, 1Taiwan, 1 China, 1 Europe, 1 Canada - 2004
- EDS Website (Xing Zhou and Albert Wang):
  - <http://www.ieee.org/organizations/society/eds/groups.html>
  - Website was transferred to IEEE to allow for better continuity
- Workshop on Compact Modeling
  - Held at the 2003 MSM Conference in San Francisco
  - Organized by Xing Zhou
  - Will be in Boston at NanoTech on March 7 - 11 for 2004
- Chaired and Edited the new Section on Emerging Research Devices for the 2003 ITRS Roadmap (Jim Hutchby)
- Submitted proposal for a EDS TED Special Issue on “Integrated Circuits Technologies for RF Circuit Applications” (Albert Wang)



## 2003 ACCOMPLISHMENTS (cont.)

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- List of proposals and candidate editors for special issues for IEEE TED
  - Non-classical CMOS devices design and related circuit concepts - H. Shang
  - Non-classical CMOS devices and technologies: Extending the Roadmap
    - Part 1 - New Materials and Process Technologies - Huiling Shang
    - Part 2 - New Device Concepts
    - Part 3 - Fundamental limit of CMOS scaling: Theory/Expmnt
  - Advanced non-volatile memory technologies (FeRAM, MRAM, Phase Change Memory, Flash, etc.) for Embedded Memories
  - Joint Issue with Transactions on Nanotechnology - Information Processing Technology and Circuit Architectures beyond CMOS - Lalita Manchanda
  - Integration of Heterogeneous Technologies - Kwyro Lee
- Identified 4 Candidates to be nominated for IEEE Fellow



## 2002 ACCOMPLISHMENTS (cont.)

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List of proposals and candidate editors for special issues for IEEE TED

- Precise Electrical Measurement Techniques - Nanometer technologies
- Organic Electronics
- Examination of Si/Dielectric Interface



## LOOKING AHEAD ...

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Add new committee members - continue to broaden international representation

Work with the IEDM Program Committee to support future activities at the IEDM Emerging Technology Session

Identify other activities that can sustain the committee's function year-after-year, e.g.

- Sponsor special issues of the EDS-TED
- Sponsor new workshops - IWFIPT - Lalita Manchanda
- Suggest EDS members for awards
- Suggest EDS members for Fellows



## Elect New Chair

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- Dr. Bin Zhao of Skyworks Solutions, Inc.



# International Workshop on Future Information Processing Technologies

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## **Executive Summary**

**Sponsors: Japan, Europe and NA/USA (SRC, AFSRO and NSF)  
Miyazaki, Japan Nov 10-13, 2003**

**Lalita Manchanda**

**SRC/Agere Systems**

**VLSI Circuits and Technology Committee**

**Dec. 7<sup>th</sup>, 2003**



# International Workshop on Future Information Processing Technologies

## IWFIPT, Nov.-2003, Miyazaki, Japan

- **Goal:**  
Develop a long range perspective on directions that are likely to be important for information processing technologies.

- | <b><u>Session</u></b>                                 | <b><u>Key Message</u></b>  |
|---|--|
| □ <b>Silicon Futures</b>                              | <b>Augment Si+ (Materials Research)</b>  |
| □ <b>Emerging Information Processing Technologies</b> | <b>May be driven by new applications</b>   |
| □ <b>Bio-Electronic Interfaces</b>                    | <b>Prosthetics and Brain-chip Interface</b>  |
| □ <b>Mobile Computing</b>                             | <b>Location Privacy and Internet Platform</b>  |
| □ <b>Business, Economics and Society</b>              | <b>Dynamic Hardware Adaptation, Ambient Intelligence and 1-2 Killer Applications are needed to grow the IT industry.</b> |