

2000 Annual EDS AdCom Report

H.-S. Philip Wong

IBM T.J. Watson Research Center

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

Topics...

- **Committee membership**
- **2000 accomplishments**
 - | **IEDM Emerging Technology Session**
- **Plans for 2001**

IEEE EDS VLSI Tech. & Circuits Committee

- **Purpose: to serve EDS member 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
- **Members (3 year max. term): members who started in 1998 will retire after 2000. Need new chair**

Term started 1998 or retired	Term started 1998	Term started 1999	Term started 2000
Charlie Sodini, MIT (Chair, 1998)	H.-S. Philip Wong, IBM , (Chair, 1999, 2000)	Werner Weber, Infineon	Lalita Manchanda, Lucent
John Lowell, Oracle	Jim Clemens, formerly Lucent	Atsushi Hori, Matsushita	Ken-ichi Goto, Fujitsu
	Jack Lau, Hong Kong University of Science & Technology		Savvas Chamberlain, DALSA
	Eric Mair, National Semi.		S.C. Sun, Wafertech
	Dennis Polla, U. Minnesota		Willy Sansen, K. U. Leuven
	Kevin O'Connor, Lucent		Pierre Woerlee, Philips
			Tsu-Jae King, UC Berkeley
			Xing Zhou, Nanyang Technical University

2000 Accomplishments

- **EDS Website (Xing Zhou):**

- | <http://www.ieee.org/organizations/society/eds/groups.html>

- **IEEE Trans. Electron Devices Special Issue**

- | “Computational Electronics: New Challenges and New Directions”

- | October, 2000, issue

- **IEDM Emerging Technology Evening Panel**

- | provides a means for continued, year-after-year, involvement of the VLSI Technology & Circuits Committee at the IEDM

- | involved many committee members in the process

- | AdHoc committee this year:

- ▶ Ken-ichi Goto (Fujitsu), Tsu-Jae King (UC Berkeley), Lalita Manchanda (Lucent), Werner Weber (Infineon), Pierre Woerlee (Philips), Philip Wong (IBM)

Evening Session

- **To provide IEDM attendees exposure to emerging technologies.**
- **Format: combines fact-delivery and opinion/idea exchange among the audience and presenter**

Formats

- **Tuesday evening, 8 pm - 10 pm, along with the regular evening panel**
- **An information/educational/discussion/debate session**
- **EDS VLSI Tech. & Circuits committee organizes and runs the session**
- **Start with information presentation, finish with discussion with panel, and with audience participation**
- **Example topics in the next foil**

Potential Topics

- Single electron devices
- Molecular electronics
- Quantum computing (theory & hardware implementation)
- Spin valve transistors
- Carbon nanotubes for future electronics
- Organic electronic devices for future low-cost electronics
- GaN devices
- Applications of self-assembly techniques
- xyz-on-a-chip
- Strategic directions from major research organizations (e.g. NSF, DARPA, SRC, SEMATECH, MITI, ESPRIT, bioX, MARCO)
- Post-Cu interconnection technologies
- Quantum devices at the atomic level
- Wireless interconnections
- Optical interconnection based on Si technology
- 3D LSI (vertical assembly technology)
- Artificial neural network and fuzzy logic
- Holographic memory
- Alternative lithography (not necessarily NGL)
- Alternative methods of energy storage
- New displays
- Chemical sensors
- Biochips
- FRAM, MRAM, MagRAM

7 Reasons for New Session & Format

- **IEDM should also be a forward looking conference. IEDM should provide attendees a view of the future technologies.**
- **Session will address the “far out” area:**
 - | **informal talks, example: nanotubes, molecular electronics, new devices, new system architecture for new devices, new materials (GaN, SiC, organics), applications of self-assembly techniques, inter-disciplinary topics combining chemistry, biology and electronics.**
 - | **Strategic directions talks, example: NSF, DARPA, SRC, SEMATECH, MITI, ESPRIT, major university centers (bioX, MARCO center)**
- **To introduce a new field, we need**
 - | **Opportunity to learn some solid background information in a new field**
 - | **Opportunity to ask questions and participate in discussion on the merits (or lack of merits) of the new technology**
- **Separate from regular sessions:**
 - | **previous “Emerging Technology” session competes with many parallel sessions**
 - | **topics may be inappropriate to include in IEDM digest - digest is “archival” quality by now**
 - | **reduce workload from IEDM committee**

2000 IEDM Emerging Technology Session

- **Topics:**

- | Single electron devices
- | Alternative memories

- **Moderator:**

- | Pierre Woerlee (Philips)

- **One speaker for each topic, plus 5 panelists**

- **2000 AdHoc committee**

- ▶ Ken-ichi Goto (Fujitsu), Tsu-Jae King (UC Berkeley), Lalita Manchanda (Lucent), Werner Weber (Infineon), Pierre Woerlee (Philips), Philip Wong (IBM)
- ▶ decide on the topics
- ▶ suggest and help find panelists and speakers

Looking Ahead

- **Need a new committee Chair - will discuss in committee meeting on Dec 10, 2000.**
- **Replenish the committee members**
- **Consolidate our gains at the IEDM Emerging Technology Session (if successful)**
 - | **select topics for the session in 2001**
 - | **organize, moderate and run the session in 2001**
- **Look for other activities that can sustain the committee's function year-after-year, e.g.**
 - | **suggest EDS members for awards**
 - | **suggest EDS members for Fellows**
- **Look for opportunities for workshops if suitable topics arise**