

### ***President's Column (Continued from Page 1)***

Today the CPMT Value Propositions -- Publications, Conferences, Education, Technical Committees, Awards, Membership and Chapters -- are focused more on the needs of all professionals. What are the needs of young scientists and engineers newly entering the profession?

As I look back into the years when I first joined a big corporation with a freshly minted PhD degree, the technology landscape was much simpler and the technology life cycle much longer. Engineering was done in-house. I was fortunate that I found an informal network and support-system which grew with me over the years.

IEEE has the GOLD Program (Graduates of the Last Decade). There is a newly established IEEE Mentoring Connection Program (see the March 2008 Newsletter, page 5). CPMT has a Student Chapters program. Are these programs meeting the needs of the Class of 2008 CPMT Professionals? We do not know. Help us to understand by sharing your input and comments.

Send e-mail to me at [wt-chen@ieee.org](mailto:wt-chen@ieee.org) or to the CPMT Executive Office at [m.tickman@ieee.org](mailto:m.tickman@ieee.org).

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### ***CPMT Society News:***

#### **CPMT Publications**

R. Wayne Johnson  
Vice President of Publications

This is my first column as the newly elected Vice president of CPMT Publications. I am excited by this opportunity to serve the members of CPMT. We have a number of activities underway that I would like to outline for you.

1. Formation of a formal Publications Committee: CPMT has operated successfully with an informal publications committee; however, I have formalized this committee. The objectives of the committee are to establish Policies and Procedures so that our Transactions have a common 'rule book' and that we are operating per the policies and procedures required by IEEE. We are also establishing Guidelines to serve as a Best Practice Manual. This will be a valuable training tool for newly assigned Associate Editors and Editors-in-Chief. The Publications Committee will also be a conduit for suggestions from the CPMT membership to improve our publications. The members of the Publications Committee are:

R. Wayne Johnson, VP Publications  
Avi Bar-Cohn, Society EiC  
Vasudeva P. Atluri, CPMT Newsletter Editor  
Ramakrishna Koneru, EiC T-CPT  
Ricky Lee, EiC T-CPT  
Jose Schutt, EiC T-AdvP  
GaneshSubbarayan, EiCTAdvP  
Ismail Fidan, AE T-EPM (2yr term)  
Ravi V Mahajan, AE TAdvP (2yr term)  
Luu Nguyen, AE T-CPT (2 yr term)

The committee has three Associate Editors who will serve a two-year term. Through rotation of these three

positions, we would like to involve many AEs over the coming years.

2. Publication Timeliness: The time-to-publish is a critical factor in the usefulness of an article and it is important to the authors. IEEE has established three metrics to monitor timeliness based on a two year window:
  - a. 80% of papers in each journal have a submission to (electronic) publication time of less than 12 months.
  - b. 50% of papers in each journal are reviewed and receive first decision within 120 days of submission. This time window will decrease on a graduated scale to 90 days over a five-year period, beginning January 2009.
  - c. No journal will have a mean submission to (electronic) publication time of more than 24 months. This time window will decrease on a graduated scale to 15 months over a five-year period, beginning January 2009.

We will be work diligently to meet (and exceed) these metrics. To do this, we need the support of everyone in the publication process: Editors-in-Chief, Associate Editors, Reviewers and Authors. The key activities will be for reviewers to return reviews on schedule and for authors to submit revisions and completed, final manuscripts quickly. While this will place additional pressure on CPMT volunteers, the results will be more useful publications. I will talk more about this in a future column.

3. Expand the Newsletter: The CPMT Newsletter is one important way of communicating with our membership. We envision expanding the Newsletter to include 2-4 technical or market-oriented articles per issue. This will provide our members with additional information and authors another opportunity to publish. The Newsletter would still contain all of the current Society information, but would be more 'magazine-like'. We are just beginning to work through the details. Suggestions and comments are welcome.

In closing, I would like to remind you that Publications are part of the communications process and communications should be two-way. If you have any suggestions for CPMT Publications, please feel free to contact me or any member of the Publications Committee.

R. Wayne Johnson, VP Publications, [johnson@eng.auburn.edu](mailto:johnson@eng.auburn.edu)

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### ***Society Board Spends Introspective Evening***

Submitted by Dr. Dave Palmer, Contributor,  
IEEE CPMT Society Newsletter

About 3 dozen CPMT volunteers met Friday night June 1st to review your Society and brainstorm on activities that will improve further your professional network. President William Chen presented the input and output of the February 14<sup>th</sup> IEEE review of our Society performed by other society presidents. This event occurs every 5 years and helps a society objectively pick future strategies and stop unproductive activities.

Our formal statement of Field of Interest contains all the topics featured at our conferences and in our Transactions. It covers broadly everything component, packaging, and electronics manufacturing engineers need in their career. It was very thoroughly rewritten about 10 years ago and is still relevant. Our core value is to "exercise, nurture, and grow our profession for the benefit of Society through knowledge advancement, innovations and im-

plementation of that knowledge and innovation". Within our mission statement are confirmations of our best opportunities and worst fears: "Our industry is fiercely competitive. Our technologies are advancing at a tremendous pace. The CPMT Society mission is to enable and support our Professionals (members and non-members) to excel." Within our vision is the statement "CPMT is the technical society...trusted and respected within and outside the profession as a premier society."

The review required a close look at any problems. "Declining membership is the major critical issue. ... To recruit membership in the US and to grow membership in these fast growing regions of Europe and Asia while serving the global professionals is the critical issue for the CPMT Society."

To set the perspective for decision making, President William Chen pointed out that the CPMT Society participates in the US\$250B semiconductor industry and the \$1.2T electronics industry. The majority of our member are in companies such as Intel, IBM, Infineon, Motorola, Nokia, NEC, TSMC, QUALCOMM, and Skyworks. Others are in universities and research institutions. Most of our members come from Europe, Asia, and North America.

As a consequence our Society strategy must include:

1. Build and revitalize chapters where there is a good base of electronic and semiconductor industries. This adds to the goal of building a global community of CPMT Professionals. (recent examples include Austin Texas, Germany, pan-Scandinavia, and Poland).
2. Establish flagship conferences in Europe and Asia (such as ESTC and EPTC). Another example is the recent joint meeting announcement with the Chinese Packaging Society.
3. Facilitate Regional Advisory committees chaired by a CPMT Strategic director to focus on regional activities (budget included).
4. Help the many CPMT stakeholders around the globe realize their link to our society's goals so they better benefit and contribute. This can be accomplished through conferences, publications, technical committees, educational offerings, chapter activities, and awards and recognitions. We want all professionals in our technical areas to feel ownership in society activities.

Paul Wesling discussed how many of our activities make a big immediate difference but do not have follow-up attention to result in long range member assistance. For example, we hold a key technical conference but then the society doesn't have any way for attendees or authors to continue participating in the knowledge sharing.

Kitty Pearsall emphasized the special need of the young beginning professionals who don't know yet how to plug into the CPMT network. We should particularly target young professionals in our future activities.

There was a long discussion on how the conference fees (normally paid by the engineer's company) could be used to pay some of the IEEE dues, which is a big hurdle for many professionals. Discussion revealed that there are many ways

to "join" CPMT without costing much, but we do not provide an easy way to find out about these ways.

The group then split into regional teams to assembly an action list for making CPMT Society more immediate for members in their region.

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## IEEE CPMT Society Board of Governors Goes Disney

Submitted by Dr. Dave Palmer, Contributor,  
IEEE CPMT Society Newsletter

On the Saturday right after ECTC, 35 of your representatives participated in the Board of Governors meeting at the Disney Contemporary Resort in Orlando, FL USA.



**Constitution:** Executive Administrator Marsha Tickman announced that the changes to our Bylaws and Constitution had finished their final step of member approval and are now in place.

**Appointments:** President William Chen announced the appointment of Koneru Ramakrishna as a new Member-at-Large. He replaces Wayne Johnson who has taken the Vice President of Publications position. Steve Bezuk was approved as the next Strategic Director of Membership and Chapters. The President then presented Ralph Russell with an award for his more than a decade of contributions to the Society.

### Regional Strategy Reports:

Charles Lee reported for Region 10. They are investigating the use of workshop and conference fees to be used to pay member IEEE/CPMT dues as well as other less expensive forms of affiliation. They are considering more involvement with student groups since this is working well for other engineering societies. A Mandarin version of the CPMT website is being developed. Charles reported that a student reception at one recent Region 10 conference was well received and will be copied at other meetings. Another push will be to have CPMT Technical committees meet in association with some of the meetings to get double value for everyone's travel. In the direction of giving recognition to our members, he reported that the Tokyo Chapter is now recognizing student achievement. The Region 10 advisory committee includes Kishio Yokouchi (Japan), Lin Kwang-Lun (Taiwan), William Chen, Philip Chan, and Ricky Lee (China), Joungho Kim (Korea), Philip Chan (Hong Kong), and Charles Lee (Singapore Malaysia).

Eric Beyne reported for Region 8. In an effort to make new membership less expensive they are trying to find out all the features of affiliate membership which is about half the normal expense. They are also looking into the longstanding Memorandum of Understanding between engineering societies since CPMT is so multi-disciplinary. They suggest we should have a policy to give CPMT speakers at a conference a lower fee than a non-CPMT speaker. They see the best benefits in having local chapters sponsor seminars, workshops and build networking. There is little ex-

pense for professionals in the local area to participate and become involved. Ten chapters already exist in Region 8 with some a mix of IEEE societies. There should also be regional level conferences/workshops that help expand networking but are still not international. Examples mentioned include ESTC and the Eurosime workshop. There are some promising activities in the Middle East: a thermal conference in Egypt and IMP in Israel.

Bahgat Sammakia reported for North America. With a goal of attracting and retaining participating professionals, we must come up with a list of compelling and member-serving reasons to participate in CPMT. We must pick approaches that last beyond any one person's activity. The first action is to define in detail the benefits of both membership and participation not just with a simple list, such as: ECTC, Xplore, Newsletter, access to tech leaders, publication opportunity, leadership training, opportunity to help others, access to restricted web sites, and opportunity for formal peer recognition. It was suggested that this list be sent to members that fail to renew. The next step is to identify the most likely professionals with affinity for CPMT by compiling lists of authors and attendees to our conferences, authors to our Transactions and related magazines, lists from industry and institutions (ECA & EIA), users of our educational material, and member networks. The third priority is to energize the student IEEE chapters with speakers and technical contests.

#### **Finances:**

Treasurer Tom Reynolds reviewed the current year budget and the projections for next year. Although our Society has large financial reserves, he did warn that conference attendance in general is trending lower (transportation costs and slow economies) and that conference costs were rising so that parts of our future income are at risk. We have about \$3.6M in our reserves but with current financial market performance this is not providing much income.

The subscription price for our Transactions for non-members will go up slightly in accordance with IEEE market survey results. We are spending a bit too slow against our targets this year but there is no reason to panic.

#### **ECTC report:**

C. P. Wong and Torsten Wipiejewski reported on the just completed ECTC. Submitted abstracts totaled 621 with 48% from industry and 52% from universities or institutes. This was 25% more than last year. From these abstracts 344 were selected for presentation, 252 oral and 92 with posters. Europe supplied 13%, Asia 28%, and North America 59%. Sixteen professional development courses were given with 340 registered students (up 16% over last year). The technology Corner attracted 83 exhibitors. Three evening panel sessions were held. There were approximately 950 paid attendees from 17 countries.

#### **Education:**

Al Puttlitz, VP Education, discussed the results of the Motorola Graduate Fellowship paper, the IEEE-CPMT Ph.D. Student Fellowship paper, and the Intel Best Student Paper competition. He pointed out that 93 student abstracts had been submitted of which 48 were accepted. He was particularly interested in having the Board raise the limit on student

travel reimbursement so that more students would have the opportunity to compete.

Al Puttlitz also presented two new CPMT distinguish Lecturer candidates for the Board to vote on. Both Nihal Sinnadurai and R. Wayne Johnson were approved. John Segelken and Paul Totta have announced their departure from the lecture tour.

There was much discussion of possible new corporate sponsorship of prizes and fellowships. A committee with academic experience was set up to propose the best way to use new funding in the student awards area.

#### **Awards:**

Kitty Pearsall reviewed our award system and the experience this year. She would always like to have more nominations particularly from Region 8 and 10 but was quite pleased by the choice her committee had this year, with 2-3 candidates for each award. Her committee: Charles Lee, Ning-Chin Lee, Kwang-Lun Lin, Petri Savilainen, Ephraim Suhir, Klaus-Jürgen Wolter, and Ralph Russell. We will try to get the nomination material in the hands of more members sooner this coming year.

There was some discussion on using the evaluation process for the Electronic Manufacturing Technology Award to get visibility from the CEO and result in more industrial activity and keynote addresses.

Kitty presented a plan for CPMT Regional Awards for Society contributions and the Board agreed after much discussion and lunch.

Len Schaper discussed the past year IEEE Field Award process resulting in Karl J. Puttlitz and Paul A. Totta winning for their many years of effort on pioneering achievements in flip chip interconnection technology and for semiconductor devices and packages. The next award deadline is January.

#### **Publications:**

Wayne Johnson reviewed the results of the 5-year TAB periodical review of CPMT. Much of the concentration was on the timeliness of publication, mostly the time from paper submittal to publication.

The first response was that CPMT formed a formal publications committee rather than the informal concerned participants of the past. The committee has ten members including the editors of the Transactions and Newsletter. In addition, CPMT is documenting our publication policies particularly for the benefit of new associate editors who may not have a lot of experience in the CPMT culture.

TAB suggested one editor-in-chief in contrast to our shared responsibility approach. We are thinking about that. Remember CPMT does not pay editors; it is an act of love which is best shared.

TAB wanted to make sure that a paper published in one of our conference proceedings does not get republished in a Transaction with no new technology. At first this seems strange since proceedings are not archival even though some of the papers are complete enough to be archived. However, with the new web search capabilities it does not look professional to have two identical papers pop up on the internet with different addresses.

We will start growing more associate editors and promoting them to guest editors for special transactions sections rather than bring-



ing in guest editors from the wilds and then after trial by fire making them associate editors.

In these new times of mostly electronic (not paper) transactions it is no longer clear that 3 Transactions are needed to cover the breadth of CPMT. One no longer worries so much about a thick publication or not being able to find papers of interest to you in a huge table of contents.

**Timeliness goals:** in looking at papers over 2 years, more than 80% must have been published in less than 12 months. In addition, 50% of submittals must have the first decision (reject or edit) occur within 120 days. For the last year we have had an IEEE staff expert help us monitor the paper flow and push the 113 delinquent papers through the system. Only 17 papers remain in the system that started before 2006.

A workshop to help authors is being offered at some of our conferences. This "Best Practices" workshop was offered at ECTC and attracted about 30 attendees. The newsletter will be expanded to include technical papers and perhaps so advertising of interest to members.

Wayne proposed the Society support a part-time publication expert to work on the newsletter expansion, laggard Transactions papers, and provide communication amongst volunteers. Resolution passed.

#### Conferences:

Rolf Aschenbrenner, VP Conferences, summarized that CPMT held 26 meeting this year compared to 30 last year. The Polytronic and Portable conferences decided to merge and will meet in Garnisch-Partenkirchen Germany in August.

The ESTC 2008 will be in September in Greenwich, Britain with 270 papers and 16 special presentations.

Phil Garrou and Paul Franzon proposed a new 3-D Silicon international workshop for April 2009. This workshop may rotate to Europe, Asia, and North America. The scope of the meeting is still flexible. The Board approved this initiative.

#### Technical Committee:

Rao Bonda, Technical VP, reviewed the status and web pages of the various technical Committees. He pointed out that TC-12 has modernized their web presence and is working with all the other committees with this goal. TC-11 has a new title – Electrical Test – Semiconductor Wafer and Packaging.

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### IEEE CPMT Society Field Award for 2008

Submitted by Dr. Leonard Schaper, Board of Governors – Member at Large, IEEE CPMT Society

The 2008 IEEE CPMT Field Award was presented on May 29, 2008, at the ECTC Conference in Orlando, Florida. The 2008 award was given to:

**KARL PUTTLITZ SR.** (F'IEEE) - President, Puttlitz Engineering Consultancy, Wappingers Falls, NY USA; and  
**PAUL A. TOTTA** – (non-member) Retired, IBM East Fishkill Facility, East Fishkill, NY, USA,

"For pioneering achievements in flip chip interconnection technology and for semiconductor devices and packages"

Karl Puttlitz and Paul Totta were part of a small development team at IBM in the early 1960s that initiated the development of the flip-chip interconnection. They established this new interconnection technology in the IBM System 360 computer line. While it has remained the primary interconnection method for IBM, these packaging technologies are found around the world in handheld products, i.e. cell phones, in advanced computer systems from laptop machines to mainframes, and in a wide variety of telecommunication equipment. Flip chip technology developed by this team is now practiced throughout the industry and has been an enabler for advanced systems and miniaturization of electronic packages and handheld systems.



Paul worked on the device side or the interconnection in an effort called Solid Logic Technology (SLT). Key to the advancement of the technology was the concept of using glass passivation on silicon devices. The glass film avoided corrosion and degradation of the device and freed the package from hermetic encapsulations which were expensive and not so reliable. As a young metallurgist entering electronics for the first time, he co-invented the concept and process for creating a metallization pad through the glass, evaporating high-Pb solder and using "homemade" copper balls as contacts and connections between the silicon device and its hybrid, thick film package. The cost of chips was reduced by orders of magnitude and the vibratory-bowl random handling of chips facilitated highly productive, low cost manufacturing. The attached chips were much more rugged and reliable than the hermetically sealed, wire bonded counterparts.

Karl worked on solder-dam development post-fired, glass thick films deposited near the ends of conductor lines forming pads to which the chip solder bumps were reflowed. The dams prevented the molten solder from running down the conductor lines during chip reflow, i.e. prevents solder joint collapse – hence the term "controlled collapse chip connection" or more popularly, C4 joint.

The early ceramic circuit boards required thick-film technology and integrated circuit elements which would be a compatible platform for the C4 devices. Karl developed both the thick-film technology used by IBM and formulations used for its integrated circuits printed on ceramic chip carriers: conductor lines, resistors, capacitors, inductors, humistors, and thermistors.

Thus, IBM's System 360 computer line was very successful because of these packaging and interconnection innovations as well as the system concepts. However, the interconnection system required many innovations on both the device side and carrier