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# EPPD

*Electronic and Photonics Packaging Division Newsletter*

*Dr. Jianmin Qu, Editor* *Spring 2001*

**DEREJE AGONAFER, PH.D.**
**Division Chair 2000 – 2001**

## Chairman's Corner

Electronic Packaging is experiencing an unprecedented growth, as it is the key technology for applications ranging from computers, telecommunication, automobiles and consumer products. The Electrical and Electronic Packaging Division (EEPD) has recently adopted a new name, Electronics and Photonics Division (EPD). EPD has two major avenues in disseminating challenging issues in packaging. The first is the IMECE conference held every year in November. The papers in this volume and the corresponding presentations at the conference have been a critical part of the technology sharing since the inception of this division. The second is Interpack, EPD's flagship conference, held every other year in Hawaii. The next one will be held in Kauai, Hawaii, July 8-13, 2001. I urge you to visit the website, http://206.20.98.79/, and participate in the upcoming conference. The conference is organized by outstanding volunteers including Professor YC Lee, University of Colorado, General Chair and Dr. Don Price, Raytheon, Technical Program Chair. This year, the EPD Executive Committee, will be making a strong push to increase membership and the number of committees who ultimately control the direction of the division. I urge you to join EPD and also participate in committee activities. Please do not hesitate to send me an email (agonafer@uta.edu <mailto:agonafer@uta.edu>) if you are interested in joining a committee or forming a new one. Finally, I would like to take this opportunity to acknowledge the great leadership of Tim Bennett during the last four years.

*Dereje Agonafer*
*EPD Chair*

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## Optical Switching and MEMS Applications: Progress and Usage

May 31-June 1, 2001
Hotel: Sheraton Universal Hotel
Location: Universal City, CA
CEUs: 1.4
Price: $795 ASME Member/ $895 Non-Member

A Technology Seminar focusing on the latest in MEMS technology with immediate focus on commercial applications and research developments.

The American Society of Mechanical Engineers (ASME International) is a recognized leader in providing continuing professional development opportunities for individuals and companies involved in research, academia, government and industry. We are launching the "Technology Seminar Series" in an effort to fulfill the need for educational opportunities in Micro-Electro-Mechanical Systems (or MEMS), and other emerging fields. Our goal is to be the conduit that brings a variety of MEMS professionals together to promote the development of these unique and promising technologies.

MEMS development combines electrical, electronic, mechanical, optical, material, chemical, biomedical and fluids engineering disciplines. Extensive applications for MEMS devices exist in both commercial and defense systems.

For further information go to . . .
http://www.asme.org/pro_dev/ce2/MEMS.html

Or contact:

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Tel: 212-591-7413
Email: smithb@asme.org.

# Some Observations on Skillful Proposal Writing

As the Director of Dynamic Systems and Control Program at the National Science Foundation (NSF) from 1992 to 1998, I had the opportunity to go through a large number of proposals that were submitted for funding consideration. In reviewing these proposals, I found a number of attributes that made a few of these proposals really standout. Such proposals were unanimously recommended by the reviewers for funding. In this article, I would like to share my thoughts on writing meritorious proposals with DSCD members.

Faculty members at research-oriented institutions are called upon to assume a variety of roles that have a major impact on promotion and tenure decisions. For example, they are expected to teach well; generate large amounts of external funding; supervise research projects of graduate and undergraduate students; and publish scholarly papers in peer reviewed journals. In addition, they are expected to participate in professional society meetings; take a leadership role in professional society sponsored activities; and of course, serve the community inside and outside the university.

In spite of sponsored research funds being made available by a large number of state and federal government agencies, private corporations, philanthropic foundations, and the like, still there are not enough resources available to fully meet the national needs. The competition for research dollars is very intense now, and will continue to remain as such in the future. An organized effort and care in preparing a thoughtful proposal is a justified investment leading to potential success in the competition. Preparing an excellent proposal is indeed hard work and time-consuming; however, the payoff makes the effort invested in this exercise extremely worthwhile.

In order to develop a successful proposal, it is indeed of foremost importance to have a meritorious idea worthy of funding. In addition, the area chosen for preparing a proposal must be of interest to the funding agency. Different agencies may have different announced areas of emphases for providing support for research projects. Also, the application procedure and guidelines for preparing proposals may widely vary. In the following discussion, the guidelines for developing a proposal for possible funding by NSF are given. The material primarily incorporates the information provided by NSF in the proposal development and submission document.

The key to a good proposal is a good idea that is well-expressed, with a clear indication of the methods for pursuing the idea, evaluating the findings, and making them understood to all those who need to know. Specifically, it should very clearly answer the following vital questions. What do you intend to do? Why is this work important? What has already been done and is known about the problem? What approach are you planning to take to solve the problem? What is innovative and novel about your approach? What kind of impact is your research likely to have locally, nationally, or internationally? How will the research influence the educational environment?

In your role as an individual investigator, you should develop and establish long-term research goals or plans. You can develop and refine a bright idea by carrying out a thorough literature search, contacting investigators working on the topic, preparing a brief concept paper, and discussing your idea with your colleagues and mentors. In preparation for doing the research you must determine the available resources and the support structure, realistically assess the requirements, develop preliminary data, and present this information to your colleagues, mentors, and/or students. By doing this you will be using your immediate contacts as a sounding board.

You should carry out a thorough search for existing possible funding sources. The information available on internet through the world wide web is a good starting point for this purpose. You should ascertain the overall scope and mission of the sponsoring agencies. Pay particular attention to their announcements and identify where your project will best fit. Become familiar with the review procedure and evaluation criteria. In the case of NSF, this information is posted on the web (www.nsf.gov), and is also printed on the back of the proposal review form.

Generally, it is an excellent idea to discuss your potential project with the relevant program officers to ascertain their possible interest in the proposed area, and to find out specific program requirements and limitations, current program patterns, and their views on the essential ingredients of a successful proposal. Coordinate your efforts with your institutional Sponsored Research Office.

Your proposal should include a very clear statement of the problem to be solved. You should demonstrate in your narrative a genuine need for a solution of the problem. Emphasize the significance of the proposed work by citing relevant background literature and gaps to be filled, and justify that it will make a real difference both inside and outside the discipline if the solution to the problem is found. Discuss the feasibility of the proposed research via testable valid hypotheses, your professional qualifications and background experience as a capable and suitable investigator, and the availability of resources and preliminary data.

An experimental plan, if used as an integral part of your project, should be described in clear terms to include a response to the following questions. What specific methodology do you propose to

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# InterPACK '01

## The PACIFIC RIM/International, Intersociety, Electronic Packaging Technical/Business Conference & Exhibition

### July 8-13, 2001 • Hyatt Regency Kauai • Kauai, Hawaii, USA

*"An International Exchange Forum of State-of-the-Art Knowledge in Research, Development, Manufacturing, and Application of Packaging of Microelectronics, Photonics, and Microwave and Microelectromechanical Systems"*

InterPACK is an internationally recognized biennual conference whose objectives are international cooperation, understanding, and promotion of efforts and disciplines in Microelectronics, Photonics, Microwave and Microelectromechanical Systems Packaging Engineering. The dissemination of knowledge by presenting research results, new developments, and novel thermal/mechanical/electrical packaging product concepts in Electronic Packaging Engineering is the foundation upon which the conference program has been developed.

**CONFERENCE UPDATE! The abstract submittal and review process has been completed. We are proud to announce that over 300 abstracts have been selected for the preliminary program.**

On the lovely Hawaiian island of Kauai you can attend sessions on state of the art topics in electronic and photonic packaging and hear world reknown speakers including...

**KEYNOTE SPEAKERS and Topics:**

WILLIAM KENNARD
Past Chairman, Federal Communications Commission on "The New Digital Economy"

PAUL MECHE
Principal Scientist, Nokia Mobile Phone on "Engineering Challenges of Telecommunications in the Next Decade"

MANABU BONKOHARA
Director, Association of Super-Advanced Electronic Technologies on "Consortium Activity for System Integration in Japan"

VIJAY LUND
Vice President, Server Technology Development, IBM Corporation on "Future Directions of High End Computing"

JEFFRY J.SNIEGOWSKI
Founder, MEMX,Inc, and Distinguished Member of Technical Staff, Sandia National Laboratories
on "MEMS: A New Packaging Challenge "

Technical session topics will focus on all areas of packaging and interconnects of microelectronics, photonics, microwave and micro-electromechanical systems including...

- Reliability
- Microelectronic Systems
- Electrical Design, Simulation and Test
- Manufacturing
- Materials and Processes
- MEMS
- Telecommunication
- Packaging Technologies
- Thermal Management
- Photonics Modeling and Characterization
- RF Microwave
- Exploratory Topics
- Education

InterPACK'01 is sponsored by the ASME International Electronic and Photonic Packaging Division (previously the Electrical & Electronic Packaging Division) ... visit them at http://www.asme.org/ and Co-sponsored by IEEE-CPMT (Components, Packaging and Manufacturing Technology Society), and JSME (The Japan Society of Mechanical Engineers). Participating Societies include the: Japan Welding Society (JWS); Japan Institute of Electronics Packaging (JIEP); Electronic Industries Association of Japan (EIAJ); The Japanese Society for Non-Destructive Inspection (JSNDI); The Society of Materials Science, Japan (JSMS); and The Korean Society of Mechanical Engineers (KSME)

*(InterPACK '01 continued on page 4)*

The InterPACK'01 Conference Committee consists of internationally known industry and academically acclaimed leaders in the field...

### Conference Committee Chairs:

General Chair ... Prof. Y. C. Lee, University of Colorado
Co-Chair ... Prof. Kikuo Kishimoto, Tokyo Institute of Technology
Program Chair ... Dr. Donald Price, Raytheon Electronic Systems

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Dr. David Whalley (United Kingdom
Dr. Johan Liu (Sweden).

Attending InterPACK'01 gives you the rare opportunity to meet and network with the Conference Committee along with many other attendees from around the world, all in one of the most beautiful locations known as the "Garden Isle"!

For more information and to register for InterPACK'01 go to...

**http://www.asme.org/conf/confers.html**

and click on **InterPACK'01** or go directly to the InterPACK'01 web site at **http://206.20.98.74/** now!

***See you in Hawaii this July!***

## Some Observations on Skillful Proposal Writing

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use? Is it feasible, adequate, and appropriate? What are the assumptions you are making? What innovations are you likely to bring in your proposed approach? Are there any difficulties you anticipate with your approach? What if you later find out that the approach does not work? Do you have alternate plans to tackle the problem?

Be sure to include a timeline in your project proposal. This should consist of the sequential and concurrent steps you plan to execute, and the time period over which each activity will take place. Discuss in detail what outcomes you anticipate, how you plan to collect and analyze the data, how you would assess and validate the results, and how you would disseminate the results. If the project is a continuation of your research activities, what plans do you have for its continuation beyond the grant period, and what are the long-range research plans so that the project results will have an impact locally, regionally, and nationally.

Utilize the available expertise to the fullest extent as you prepare the project description. This includes input from your colleagues, mentors and peers. If the proposal is being prepared following the review of a pre-proposal (or it is a revised submission of an earlier proposal), the comments offered by the reviewers must be adequately addressed. In addition, the input and informal advice of the Program Officer handling the review could be most helpful.

It is important to develop the ideas clearly and logically, putting the essence of work being proposed in the beginning, ensuring a coherent direction, and organizing the manuscript such that it is easy to be skimmed by the reviewer at its first reading. Explain all matters clearly without assuming that the reader, i.e., the reviewer, will necessarily know what you meant. The readability can be improved by using clarifying material and style, such as well-designed visuals, and highlighting main points. Address in the project narrative the evaluation criteria, making sure that any special requirements have been included, and convey to the reviewer a sense of enthusiasm for your work.

It must be emphasized that you should pay special attention to the page limits specified by the funding agency. For example, unless otherwise specified, the National Science Foundation has imposed a limit of 15 pages on the project description portion of the proposal. Appendices can be included only if allowed by a specific program announcement, or if approved in advance by the appropriate NSF Assistant Director or designee. As far as possible, in your text use a concise scientific writing style using simple sentence structure, spelling out acronyms at their first usage, and avoiding jargon. Allow enough time for a thorough editing and proofreading. Misspelled words and poorly constructed sentences cause a lot of distractions and take away from the essence of the message you might be trying to convey. When you assemble the package together, keep it neat and verify that it is complete in all respects before mailing. Of course, make sure that it definitely reaches the sponsoring agency by the announced deadline.

Happy proposal writing and best wishes for achieving success in your goal!

*Dev Garg*