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IEEE Electron Devices Society

Awards

to be

presented at the

2013 IEEE International Electron Devices Meeting

Washington, DC ♦ December 9, 2013



J.J. EBERS AWARD

The J.J. Ebers Award was established in 1971 by the IEEE Electron Devices Society. It is intended to foster progress in electron devices and to commemorate the life activities of Jewell James Ebers, whose distinguished contributions, particularly in the transistor art, shaped the understanding and technology of electron devices. The award is intended to recognize and honor accomplishments of unusual merit in the electron device field and is given *for outstanding technical contributions to electron devices.*



J.J. EBERS
1921 – 1957

PREVIOUS AWARD WINNERS

| | | | |
|------|----------------------|------|---------------------|
| 1971 | John L. Moll | | Richard S. Payne |
| 1972 | Charles W. Mueller | 1993 | Karl Hess |
| 1973 | Herbert Kroemer | 1994 | Alfred U. Mac Rae |
| 1974 | Andrew S. Grove | 1995 | Martin A. Green |
| 1975 | Jacques I. Pankove | 1996 | Tetsushi Sakai |
| 1976 | Marion E. Hines | 1997 | Marvin H. White |
| 1977 | Anthony E. Siegman | 1998 | B. Jayant Baliga |
| 1978 | Hung C. Lin | 1999 | James T. Clemens |
| 1979 | James M. Early | 2000 | Bernard S. Meyerson |
| 1980 | James D. Meindl | 2001 | Hiroshi Iwai |
| 1981 | Chih-Tang Sah | 2002 | Lester F. Eastman |
| 1982 | Arthur G. Milnes | 2003 | James D. Plummer |
| 1983 | Adolf Goetzberger | 2004 | Jerry G. Fossum |
| 1984 | Izuo Hayashi | 2005 | Bijan Davari |
| 1985 | Walter F. Kosonocky | 2006 | Ghavam G. Shahidi |
| 1986 | Pallab K. Chatterjee | 2007 | Stephen J. Pearton |
| 1987 | Robert W. Dutton | 2008 | Mark R. Pinto |
| 1988 | Al F. Tasch, Jr. | 2009 | Baruch Levush |
| 1989 | Tak H. Ning | 2010 | Mark E. Law |
| 1990 | Yoshiyuki Takeishi | 2011 | Stuart Ross Wenham |
| 1991 | Simon M. Sze | 2012 | Yuan Taur |
| 1992 | Louis C. Parrillo | | |

2013 J.J. EBERS AWARD RECIPIENT

NOBUKAZU TERANISHI

"For development of the Pinned Photodiode concept widely used in Image Sensors"



Nobukazu Teranishi was born in Kobe, Japan in 1953. He received the B.S. and M.S. degrees in physics from University of Tokyo, 1976 and 1978, respectively.

He developed image sensors and cameras at NEC Corporation from 1978 to 2000 and at Panasonic Corporation from 2000 to 2013. He is now professor of the University of Hyogo and Shizuoka University, where he develops photon counting image sensor, imagers for various wavelength; visible, infrared, X-ray, and new functions for image sensors.

He invented pinned photodiode (PPD) for no image lag, low noise and low dark current at image sensors in 1980. The PPD CCD has been in mass production since the mid 1980's because of its superior performances. In the late 1990's, PPD was introduced into CMOS image sensors. Then, their performance became competitive to CCD's. The high performance of PPD drove the pixel size shrinkage, and realized higher resolution. Now, almost all CCD's and CMOS image sensors came to utilize the PPD. The PPD is most innovative technology for both CCD's and CMOS image sensors. The market has been widely spread into every corner. As a result, 1.3 billion image sensors were produced in 2010.

He has authored and co-authored 80 papers and holds 46 Japanese patents and 21 US patents. His leadership at academic societies and industry and his PPD invention have been honored by government organizations as well as societies around the globe. He won the Prize of the President of KEIDANREN of National Invention Awards in 1994, Commendation by Minister of State for Science and Technology in 1997, Niwa-Takayanagi Award from the Institute of Image Information and Television Engineers in 2000 and 2013, Progress Medal and Hon. Fellowship from Royal Photographic Society in 2010, Progress Medal from Photographic Society of America in 2011. His group won the Emmy Award in 1991 by the broadcast-use CCD camera development.

He is a fellow member of the Institute of Image Information and Television Engineers of Japan, where he served as a chair of the paper editor committee and a chair of the Information Sensing Committee. He is also a fellow member of the IEEE, where he served as a general chair for 1999 and 2005 IEEE Workshop on Charge-Coupled Devices & Advanced Image Sensors. He serves as President of International Image Sensors Society.

He and his wife, Makiko, have two sons and two lovely granddaughters. They like traveling and hot springs.