# CAESAR SALOMA:

# Promoter of Philippine Scientific Culture
## (Scientist, Mentor, Leader)

**By Erika Fille T. Legara**

**"While succeeding is by no means easy or guaranteed, it is not also impossible; and the fruits of a hard-earned victory are much sweeter because these fruits are shared with people who are not merely our students or collaborators but more significantly, our blood brothers who share with us the same set of aspirations and dreams for our nation."**

These are the inspiring words of a remarkable Filipino physicist named Caesar A. Saloma. His research work in photonics, signal processing and complex systems have been carried out primarily with students and colleagues in the University of the Philippines Diliman. He has been able to demonstrate that a scientist could succeed in the Philippines despite prevailing unfavorable conditions.

Dr. Saloma is a professor at the National Institute of Physics (NIP), University of the Philippines. He obtained his B.S., M.S., and Ph.D. degrees from the University of the Philippines in 1981, 1984, and 1989, respectively. He was appointed to the highest rank of Scientist III by the UP System in 2006 (one of three issued) and re-appointed in 2009 (one of two issued).

**A Remarkable Scientist**

Dr. Saloma began working in optics in October 1987 as a Monbusho exchange scholar at the Department of Applied Physics, Osaka University in Japan in pursuit of his PhD dissertation under the guidance of Professor Shigeo Minami. In the 1980s, the NIP had not yet acquired the necessary equipment and financial support, not to mention the qualified research supervisors, to allow graduate students like him to perform advanced research investigations in applied physics.

In March 1989, Dr. Saloma returned to NIP and formed his research group in the Instrumentation Physics Laboratory (IPL). To date, Dr. Saloma has authored more

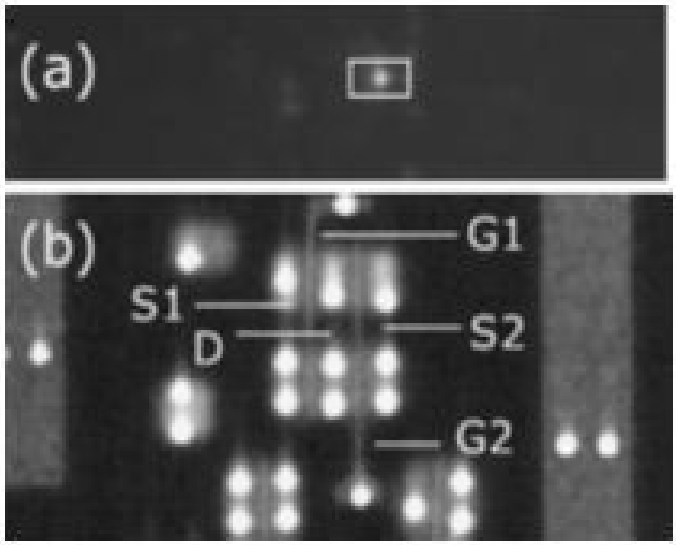


Fig. 1. (a) Image [34.84 X 270 μm2, L1 numerical aperture = 0.42 (50x), and working distance = 17 mm] with a single bright blob (rectangle) from two closely spaced MOSFETs, and (b) backscatter SEM image (1 X 2.2 μm2) with two MOSFETs (1, 2; S = source, G = gate) sharing a common drain (D). Bright spots in SEM image are metal contacts.

than a hundred technical articles in SCI-indexed journals in the US and Europe. He led a team that developed a method to generate high-contrast images of semiconductor sites via single photon optical beam-induced current imaging and confocal reflectance microscopy (Figs. 1 and 2). They were granted a US patent (No. 7,235,988) in June 2007 for their invention.

His interest in signal processing eventually led Dr. Saloma to become interested in developing tools for describing the dynamics of real-world systems that involve a large number of interacting agents. One of his works entitled "*Self-organized queuing and scale-free behavior in real escape panic*," which was published in the Proceedings of the National Academy of Sciences (USA) in 2003, caught the attention of international news media including New Scientist (22 September 2003), Nature Science News Update (23 September 2003), Wired (January 2004), *Spektrum Der Wissenschaft* (Nr 6/2003) and BBC News Radio.

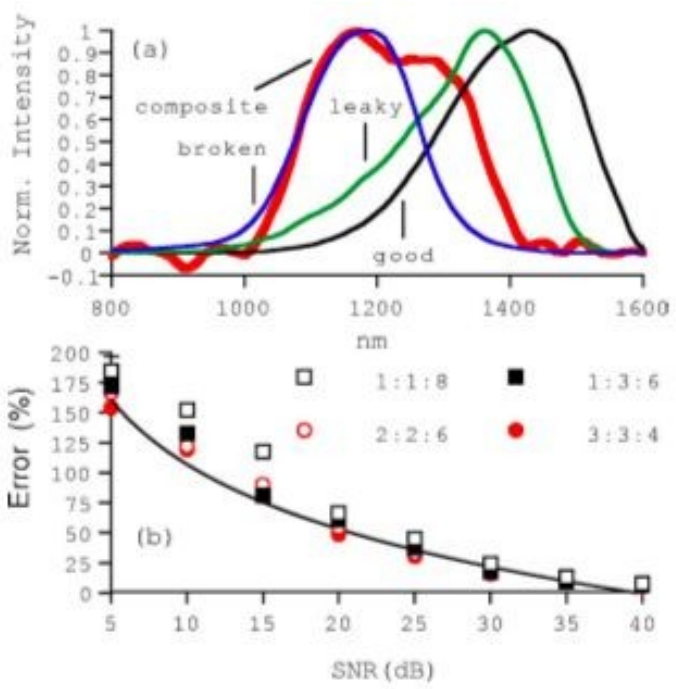


Fig. 2. (color online) (a) Composite spectrum (red, 10 nm resolution) of bright blob in Fig. 1(a), and (b) error (%) vs. SNR of composite spectrum at different power ratios of component spectra. In (a) are spectra from good, leaky, and broken MOSFETs measured with a grating spectrometer. In (b), ratio of 1:1:8 implies that good MOSFET spectrum is 8X stronger than other two MOSFET spectra. Trials per point = 9. Solid line: Error (%) = -178.8 log (SNR) + 285.7.

Source of Fig. 1 and 2: W. Oblefias, M. Soriano, A. Tarun and C. Saloma, "Individual classification of buried transistors in live microprocessors by functional infrared emission spectral microscopy," Applied Physics Letters 89, 151113 (2006).

Dr Saloma received the *Galileo Galilei* Award from the International Commission for Optics in 2004. He was elected into the National Academy of Science and Technology, Philippines in 2005. In July 2008 he was recognized with the triennial ASEAN Outstanding Scientist and Technologist Award from the ASEAN Committee on Science and Technology.

He received the *Lingkod Bayan* Award - the

Presidential Award for Outstanding Public Service, from Philippine President Gloria Macapagal-Arroyo (PGMA) in September 2008. The award is the highest recognition given to a Philippine government employee for outstanding work performance.

**An Effective Administrator**

Dr. Saloma has proven his competence to lead academic institutions and organizations. The small research group that he assembled at IPL in 1989 now has 61 members. It has produced twenty-two Ph.D. and more than thirty M.S. graduates and trained more than a hundred undergraduate apprentices. It has published more than 125 SCI-indexed articles.

He served as president of the *Samahang Pisika ng Pilipinas* (SPP) for two terms (January 1996 – December 1999). He pioneered the peer-review process to screen submissions to SPP annual conferences. He introduced new SPP leadership policies that improved the organization both administratively and fiscally. In 2008, he was elected Inaugural Fellow of SPP during the 26th SPP Physics Congress in Baguio City.

Dr Saloma was a director of NIP for two consecutive terms from June 2000 to May 2006. His tenure was characterized by painstaking efforts to improve the quality of graduate and undergraduate instruction and to increase the productivity of NIP researchers.

He is currently serving his second consecutive term as Dean of the College of Science (CS) in UP Diliman. He is coordinating the completion of the National Science Complex that was established by PGMA on 8 December 2006 in her issuance of Executive Order 583. The NSC is operated by UP through CS.

**An Inspiring Mentor**

Dr Saloma is not only a productive physicist but a successful mentor as well. He is a tireless advocate of graduate student mentoring by CS PhD faculty members.

He leads by example. As of April 2008, he has supervised a total of nineteen PhD graduates, six of whom were recognized as the Most Outstanding PhD Graduate of CS. His contributions to improve the quality of higher education in the country have also been duly recognized. He was the recipient of the UP Diliman *Gawad Chanselor para sa Natatanging Guro* in 2006 and the 2007 Metrobank Foundation *Outstanding Teacher Award*. **PSL**