

PROFILE

Electron Devices Society Celebrated Member

Tom Sah Chihtang[□] receives high honor for contributions in transistor physics, in integrated circuit manufacturing technology and more

Chih-Tang Sah is the Academician Professor in the Physics Department of Xiamen University, Xiamen, China since April 2010. He has been studying silicon diodes and transistors for 70 years since 1942, when a lightning fireball passed over his head and burnt open the 100-foot-long radio antenna of the Xiamen University Radio Physics Laboratory in Changting, China.

He taught at two American Universities for 50 years from 1961 to 2010, and directed 50 doctoral theses in Physics and in Electrical and Computer Engineering and 35 MS theses. During this and previous periods, he also directed the research of 50 industrial and academic postdoctoral associates. With his graduate students and research associates, he published about 300 journal articles, and gave about 150 keynotes and invited talks in China, Europe, Japan, Singapore, Taiwan and the United States, on transistor physics, technology, and evolution history.

He was listed in a survey released in 1981 by the Institution of Scientific Information (ISI) of Philadelphia as one of the world's 1000 most cited scientists during 1965-1978. Professor Sah published a 3-volume best-seller textbook (1991, 1993, 1996) on transistor electronics for college sophomores and juniors, which are still in use today, titled *Fundamentals of Solid-State Electronics*.

Sah has also edited about ten monographs on compact transistor models and integrated circuit invention history, published in the World Scientific Publishing Company series, ASSET (Advances in Solid-State Electronics and Technology), which he founded in 1991.



Tom Sah Chihtang

Tom Sah Chihtang is the first son of the late Adam Sah Pen-Tung, who was a Beijing Tsinghua University Physics Professor (1930-1937), the author of the two-volume university physics textbook of China (1931-1950), the first President of nationalized Xiamen University (1937-1944) and the Secretary General of the Academia Sinica (1945-1949); and of the late Susan Huang Shu-Shen Sah, who was the three-track-record breaking Chinese Olympian (1930) and a US university mathematics professor (1961-1977). He was married to the late Linda Su-Nan Chang Sah (1959-2003).

Tang Sah and his late younger brother, Chih-Han Sah were brought over to the United States (1949) by the late William (Bill) and Dorothy Everitt to start their college education at the University of Illinois in Urbana-Champaign (UIUC).

Tom received (1953) two BS degrees (Physics and Electrical Engineering) from UIUC.

He then went to Stanford and received the MS (1954) and PhD (1956) degrees, on the external circuit traveling tubes, under the tutelage of Karl R. Spangenberg.

Tang Sah's industrial career in solid-state electronics began (1956-1959) under William Shockley and continued (1959-1964) at the R&D Laboratory of Fairchild Semiconductor Corporation with Robert N. Noyce and Gordon E. Moore, where he helped hire, direct and manage a transistor Physics and Technology team of 64 members who developed the first generation manufacturing technology of silicon bipolar and MOS integrated circuits.

At the universities, Tom Sah has continued to help the semiconductor manufacturing companies (including IBM, Intel, TSMC) by technology advising to his former graduate students who are running their companies. He also served as a consultant to several US government agencies while teaching at UIUC.

For contributions in transistor physics, in integrated circuit manufacturing technology, and in bringing up his graduate students and associates who have advanced the silicon integrated circuit industry, Chihtang Sah has been recognized six times by the Electron Device Society (EDS) of the IEEE: the Browder J. Thompson best paper prize for an author under thirty (1962); a Fellow (1969); a Life Fellow (1995); the J. J. Ebers (1981) and Jack Morton (1989) Awards; and the EDS Celebrated Member (2012) to serve as a role model.

He was also elected (1971) a Fellow of the American Physical Society for completing five Physics PhD theses. For these efforts, he was given the Franklin Institute (1975) Certificate of Merit on MOS technology, and recognized by the two Industry Associations, the first Achievement Award in High Technology (1984) from the Asian American Manufacturing Association in San Jose, California and the fourth University Research Award (1998) from the United States Semiconductor Industry Association (US SIA).

He was conferred the Doctor Honoris Causa (1975) by K. Universiteit de Leuven, Belgium, the honorary doctorate (2003) by Taiwan Chao- Tung University, and the National Honorary Doctorate of China (2010) nominated by Xiamen University. He has been appointed an Honorary Professor by three Universities in China, Peking (2002), Tsinghua (2003) and Xiamen (2004). He was given the first Pioneer Recognition Award (2002) by US Committee-100, and the second annual Distinguished Lifetime Achievement Award (2003) by the Asian American Engineer of the Year (AAEOY), nominated by the Chinese Institute of Engineers (CIE/USA). He was elected a member of the US National Academy of Engineering (1986), Academia Sinica in Taipei (1998) and Chinese Academy of Sciences in Beijing (2000).

Prof. Sah was informed recently (August 22) that he was selected to become the next Celebrated Member (CM) of the 10,000+member IEEE Electron Devices Society (IEEE EDS). The ceremony was held at the Conference Banquet of the 43rd annual IEEE EDS SISC (Semiconductor Interface Specialist Conference) on a Cruise Boat in the San Diego Bay on Friday, December 7, 2012.

The announcement of this CM recognition is to be made by the sponsor, the EDS, at the event. This award represented the recognition of his efforts in the last 60 years in education, research, engineering and manufacturing of semiconductor electronics and integrated circuits.



Dear Professor Sah:

For nearly 60 years, The IEEE Electron Devices Society (EDS) has been one of world's leading technical societies devoted to advancing the field of device engineering. Our 10,000 members include undergraduate students, academics, industry leaders, and Nobel Laureates George Smith and Herb Kroemer, both of whom recently became Celebrated Members of EDS. In recognition of your outstanding contributions to both our industry, and to humanity at large, it is my great pleasure to inform you that you have been selected by the EDS Board of Governors to be our next Celebrated Member. Those of us in EDS take pride in the accomplishments of Celebrated Members and draw inspiration from their accomplishments to continually advance our field for the benefit of society. If you agree to accept this award, then we will make the first public announcement at the IEEE Semiconductor Interface Specialists Conference (SISC) which will be held in The Catamaran Resort Hotel, San Diego, CA, on December 6-8, 2012. We certainly hope you can attend the ceremony to accept the award in person on the evening of Friday, December 7. The travel expenses for you and a guest will of course be covered by the EDS. Congratulations! I look forward to hearing from you at your earliest convenience.

Sincerely,
Paul Yu

A handwritten signature in black ink, appearing to read "Paul Yu".

President, Electron Devices Society



