

	Speaker	Guoxing Wang
	Talk Title	How Integrated Circuits Can Restore Vision for Blind People
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1. Tentative Abstract

Artificial Retina is a device aiming to provide vision back to people who unfortunately became blind due to diseases such as Age-related Macular Degeneration and/or Retinitis Pigmentosa. Many scientists, medical doctors, and engineers from different fields have worked together for about two decades and finally a chronic device has been approved to reach the market in 2011. Patients with this device could see large letters and some could even read! In the device, the integrated circuits play a critical role. In this talk, we will talk about the history, achievements and challenges, and learn about the role of electronics, in particular, integrated circuits, in such a complicated device.

2. Brief Biography

Guoxing Wang received his Ph.D. degree in electrical engineering from University of California, Santa Cruz in January 2006. Dr. Wang currently holds an associate professorship in School of Microelectronics, Shanghai Jiao Tong University. His research interests broadly spans in the areas of bio-inspired electronics, biomedical electronics, and healthcare technologies. He has been actively working on bio-mimetic electronic systems, including a few years' industry experience with Second Sight Medical Products, Los Angeles, a start-up company developing artificial retinal devices

where he designed the chip implanted into the eye to restore vision. Dr. Wang has been actively publishing in peer-reviewed journal papers, conference papers, and book chapters. He has been a member on IEEE Biomedical Circuits and Systems Technical Program Committee and serves/ed as an editorial board for IEEE Transactions on Circuits and Systems II, IEEE Transactions on Biomedical Circuits and Systems, IEEE Journal on Emerging and Selected Topics in Circuits and Systems. He will serve the technical program chair for IEEE Conference on Biomedical Circuits and Systems (BioCAS) in 2015.

3. List of Representative Publications

Xin Yi, Jun Jia, Simin Deng, Guofang Shen, Guoxing Wang, “A Blink Restoration System with Contralateral EMG Triggered Stimulation and Real-Time Artifact Blanking,” IEEE Transactions on Biomedical Circuits and Systems, 7(2), pp. 140-148, 2013.

Deng S, Yi X, Xin P, Yu D, Wang G, Shen G. “Myoelectric signals of levator palpebrae superioris as a trigger for FES to restore the paralyzed eyelid,” Med Hypotheses, 78(5), pp. 559-61, 2012.

Yingjie Cao, Yongxin Zhu, Zhongduo Lin, Guoxing Wang, Guoguang Rong*, Zonghua Gu, “Efficient Optical Pattern Detection for Microcavity Sensors based Lab-on-a-Chip,” IEEE Sensors Journal, 12(6), pp. 2121-2128, 2012.

G. Wang*, P. Wang, Y. Tang, W. Liu, “Analysis of Dual Band Power and Data Telemetry for Biomedical Implants,” IEEE Transactions on Biomedical Circuits and Systems, vol. 6, no. 3, pp. 208 – 215, June 2012.

M. Sivaprakasam, W. Liu, G. Wang, J. D. Weiland, and M. S. Humayun, “Architecture Tradeoffs in High Density Microstimulators for Retinal Prosthesis,” IEEE Transactions on Circuits and Systems – I, Special Issue on Biomedical Circuits and Systems, vol. 52, no. 12, pp. 2629 – 2641, Dec. 2005.