

James Rhodes, PhD

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RESEARCH SCIENTIST

Proven success driving groundbreaking advancement within the semiconductor-manufacturing sector through scientific research and scalable design.

Track record of delivering:

- Patented devices generating \$58M in 2011
- Next-generation polymer-based organic light-emitting diodes (POLED) technologies with quality nearly equal to SMOLEDs for less than half the cost.
- Fully integrated circuit and system solutions that delivered new bests in speed, power, frequency, reliability, linearity and yield

EDUCATION

ABC UNIVERSITY -- Sometown, PA

PhD in Electrical and Systems Engineering, 2007

MS in Electrical Engineering, 2005

GHI UNIVERSITY -- Sometown, PA

BS in Electrical Engineering, 2003

EXPERIENCE

ABC COMPANY (*one of the top 10 semiconductor manufacturers in the US*) -- Sometown, PA

Research Scientist, 2008 to Present

Manage industrial research laboratory and projects focused on developing devices, circuits and systems for semiconductors used by some of the world's largest consumer electronics, telecommunications and computer suppliers.

Research Project Highlights:

- Led research and development of patented devices for nanoelectromechanical systems (NEMS) for mobile technologies that generated \$58M in revenues for key client XYZ Co. in 2011 alone.
- Directed R&D efforts for polymer-based organic light-emitting diodes (POLEDs) that achieved nearly 90% of the quality of small-molecule organic light-emitting diodes (SMOLEDs) at a 55% lower cost.

- Designed, tested and prototyped oscillators combining high-frequency capability with robust temperature- and acceleration-insensitivity that provided for mechanical and electrical integrity at variable temperatures.
- Participated in research project that prototyped integrated-circuit and system solutions improving speed, reliability, linearity, power, frequency and yield by as much as 38%.
- Contributed to the development of surface-acoustic wave (SAW) resonators and low-voltage solutions for battery-operated handheld devices, leading to a \$25M contract with a Fortune 500 consumer electronics leader.
- Earned company awards, including two-time “President’s Innovation Awards” and “Design for Manufacturability Award.”

RESEARCH FELLOWSHIP

ABC UNIVERSITY (*Ivy League university with a top-ranked engineering school*) -- Sometown, PA
Research Fellow, School of Engineering and Applied Science, 2006 to 2007

Designed, conducted and completed research on the design and fabrication of high-frequency oscillators as well as high-quality factor vibrating mechanical structures. Co-authored grant that secured \$175K in funding for semiconductor research.

PUBLICATIONS

Rhodes, J. and Weston, C., “A comparison of organic and inorganic semiconductor nanomaterials for integrated-electronics solutions,” *Somename Journal Vol. 4514*, pp. 156-168, November 2011

Rhodes, J., Williams, B. and Clark, P., “New design techniques to convert post-silicon devices into robust performers for commercial applications,” *Somename Journal Vol. 4498*, pp. 86-92, June 2010

Rhodes, J., Smith, B. and Jones, A.H., “Innovative applications for two-terminal nanoelectromechanical bistable switches,” *Somename Journal Vol. 2594*, pp. 42-51, January 2010

Rhodes, J. and Clark, P., “Minimizing the effects of parasitic elements in high-frequency oscillators,” *Somename Journal Vol. 4487*, pp. 97-104, September 2009

PATENTS

- US Patent X,XXX,XXX
Device for nanoelectromechanical systems to increase resonant frequency
- US Patent X,XXX,XXX
Device for nanoelectromechanical systems to lower force constants

TECHNOLOGY TOOLS (complete list on request)

Unix/Linux, Windows, Perl, C, Simucad & Silvaco CAD tools, Cadence Virtuoso Layout Suite, E Language, HSPICE, Tanner EDA's L-Edit

AFFILIATIONS

Institute of Electrical and Electronics Engineers
Semiconductor Industry Association