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Technical Seminar

High Impact Alternative Energy R&D at a University

Jerry M. Woodall

National Medal of Technology Laureate
Distinguished Professor of Electrical and Computer Engineering
University of California, Davis

Date & Time:
Friday, September 6, 2013 @ 2:00pm - 3:30pm

Location:
Hughes Aircraft Electrical Engineering Center (EEB)
Room 248

*****ALL ARE WELCOME TO ATTEND*****

ABSTRACT:

This presentation is about game changing alternative energy R&D at a university. This is not an easy career path, because if you have a great idea that will likely be a game changer, but not on some agency's roadmap, you most likely won't get funded. This is why most tenure track and mid-career professors chose to chase the money instead. This situation is particularly onerous for those working in the alternative energy fields such as photovoltaics (PVs), energy storage, and energy conversion. And because agencies fund "roadmaps" rather than fund track record and great ***practical*** ideas that could lead to "products" and not just mostly unread Ph.D theses, the US will not be among those nations who reap the economic benefits of the alternative energy industries.

In spite of this situation I have chosen to work on high impact alternative energy projects. My presentation will cover the highlights of my self-defined alternative energy programs, which, if successful, will lead to new alternative energy products. These include a solar power conversion project and a project that uses bulk aluminum rich alloys for large scale and safe energy storage, which splits water to make hydrogen on-demand. My presentation will include a discussion of why, in my opinion, the government funding agencies are not supporting the academic community in performing high risk but high impact R&D so desperately needed by the US technology based economy.

BIO:

Jerry M. Woodall, a National Medal of Technology Laureate, and Distinguished Professor of Electrical and Computer Engineering at UC Davis, received a B.S. in metallurgy in 1960 from MIT. In 1982, he was awarded a Ph.D. in Electrical Engineering from Cornell University. He pioneered and patented the development of GaAs high efficiency IR LEDs, used in remote control and data link applications such as TV sets and IR LAN. This was followed by the invention and seminal work on gallium aluminum arsenide (GaAlAs) and GaAlAs/GaAs heterojunctions used in super-bright red LEDs and lasers found in, for example, CD players and short link optical fiber communications. He also pioneered and patented the GaAlAs/GaAs heterojunction bipolar transistor used in, for example, cellular phones. Also, using GaAs/InGaAs strained, non-lattice-matched heterostructures, he pioneered the "pseudomorphic" high electron mobility transistor (HEMT), a state-of-the-art high speed device widely used in cellular phones. He is currently developing a high speed, high power HBT fabricated with merged III-V and III-N materials, small scale photo thermal solar energy converters, and developing a new company to market ultra high purity hydrogen and UHP alumina by splitting water with aluminum-gallium alloys.

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