

# The **B E E T**

*The Bulletin of Electrical & Electronics Engineers of Tucson*

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## IEEE JOINT CHAPTER MEETING

### *Terahertz Technology in Outer and Inner Space*

Date: Tuesday, March 27, 2007, 6:00 P.M.

Speaker: Dr. Peter Siegel

Place: Cesar E. Chavez Bldg. Room 110, U of A

**Note the room change, allow extra time for parking.**

After more than 30 years of niche applications in the space sciences area, the field of Terahertz Technology is entering a true Renaissance. While major strides continue to be made in submillimeter wave astronomy and spectroscopy, the past few years have seen an unprecedented expansion of terahertz applications, components and instruments. Broad popular interest in this unique frequency domain has emerged for the first time, spanning applications as diverse as biohazard detection and tumor recognition. Already there are groups around the world who have applied specialized Terahertz techniques to disease diagnostics, recognition of protein structural states, monitoring of receptor binding, DNA sequencing and visualizing contrast in otherwise uniform tissue. A commercial terahertz imaging system has recently started tests in a hospital environment and new high sensitivity imagers with much deeper penetration into tissue have begun to emerge. Solicitations for more sophisticated instruments and enabling terahertz components have filtered into US agency proposal calls from DoD and NASA, to NSF and NIH, and many new research groups have sprung up, both in this country and in Europe and Asia. This talk will broadly survey Terahertz technology from its cradle applications in space science and spectroscopy to more recent biomedical and chemical uses.

Peter H. Siegel obtained a BS in astronomy from Colgate University, in 1976, an MS in Physics and a PhD in Electrical Engineering from Columbia University in 1978 and 1983 respectively. He has been involved in analysis and development of millimeter-and submillimeter-wave sensors for 30 years.

In 1993, he founded the Jet Propulsion Lab Submillimeter Wave Advanced Technology team (SWAT), working on submillimeter-wave technology for NASA's near and long term astrophysics, Earth remote sensing, and planetary mission applications. He is currently a Senior Research Scientist in submillimeter wave technology. At JPL, Dr. Siegel has led or co-led more than sixty R&D programs as well as developing and delivering hardware for four major space flight instruments. Recently Dr. Siegel joined the staff at Caltech as a Senior Scientist at the Beckman Institute, Division of Biology, where he is working on biological applications of THz technology. He maintains a joint appointment as the Technical Group Supervisor for SWAT at JPL, where he continues to propose and work on space applications of THz technology.

#### Conferences Coming to Tucson

The 2007 IEEE Symposium and Workshop on Engineering of Computer Based Systems (ECBS) (Meeting #12302) will be coming to Tucson. This conference will be held 26-29 March 2007 at the Doubletree. For more details see:

<http://www.ece.arizona.edu/~ecbs07>

#### Feedback and Volunteering

We need to hear from you! We want to know what we can provide to make IEEE a better organization. If you have any ideas for meetings, any activities that promote engineering and the IEEE, let us know! We'd like to hear from you. Also, remember that we run this as a set of volunteers. If you put something into this organization, you can get much more out of it! We need you to help out! Contact us! Help out! Contact us!

The Tucson Section also has standing committees whose chairperson is not elected, but is appointed by the Section Chairman. If you are interested in any of these positions or are interested in having a say in what the Tucson Section does, please notify Joseph Wu at [joewu@ieee.org](mailto:joewu@ieee.org) or at 325-4781.

#### Computer Society Chapter Forming

A chapter of the Computer society is forming in the Tucson Section. If you're interested in this society or in getting involved, contact Andrew Gardner at [asg@ieee.org](mailto:asg@ieee.org)

#### Senior Membership

Do you want to become a senior member of the IEEE? The IEEE wants to promote qualified candidates to senior membership! If you have 10 years of professional experience of which five years is significant professional performance, you are qualified for a senior member upgrade. Educational experience such as a bachelor's degree in an IEEE-designated field counts 4 years to that number, a master's degree counts 5 years and a doctorate counts 6 years. In order to find out more, point your web browser to [www.ieee.org](http://www.ieee.org) and search for senior membership!

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**Tucson Section Meeting  
Thursday, March 1, 2007  
6:00 PM, at the U of A  
Cesar Chavez Room 110**

**(Next to Old Engineering, NW of Old Main.  
Parking available East of the AME building  
after 5 P.M. – it may be a bit of a walk)  
Refreshments Provided**

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**Just find the link through our website and follow the directions.**

**Remember**

- We're always looking for topics for general meetings, if you have an idea or a speaker in mind let us know!
- Also, check out the website at:

<http://www.ieee.org/tucson>

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