



# IEEE

# MADISON SECTION NEWSLETTER

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**JANUARY 2008**

## Measuring Lung Functional Residual Capacity Using a Nitrogen Washout Technique

**Date/Time:** Tuesday, January 15, 2008, 11:45 - 1:00 PM (NOTE: this is a Tuesday, NOT Thursday!)

**Speaker:** Gary Choncholas, Software Team Leader at GE Healthcare, Madison, WI

**Location:** Rocky Rococo's Pizza, 7952 Tree Lane (Madison Beltline Hwy. at Mineral Pt. Rd.), 608.829.1444

**Menu:** Pizza buffet, salad and soft drinks (cost \$10.00, free for student members)

**RSVP:** by January 13th to Mitch Bradt via e-mail (bradt@wisc.edu) or call 608.263.1085



*Non-member guests are always welcome!*

This presentation will describe a technique for measuring lung volume using nitrogen washout. Determining lung volume is clinically important for measuring the efficacy of lung recruitment. In certain situations and disease states, the lung can partially collapse. Under positive pressure ventilation, the lung can experience cyclic opening and closing at the boundary which can have deleterious effects on the lung tissue in less than a day. Opening (recruitment) the lung prevents this from happening. Knowing the lung volume before and after the recruitment procedure can determine if the recruitment procedure was effective in reducing the collapsed lung volume. Once the lung is open, positive pressure is introduced at the end of exhalation (PEEP). The positive pressure prevents the lung from recollapsing. Too much PEEP can reduce cardiac output. Knowing lung volume at various PEEP values can help determine a suitable PEEP.

Gary Choncholas is the Software Team Leader and is a Senior Software Engineer with Datex-Ohmeda (now a part of GE Healthcare). He obtained his B.S.E.E. and M.S.E.E. from the University of Wisconsin-Madison in 1983 and 1986, respectively. He has held a number of positions using his skills with microprocessors, software, digital signal processing towards the end of product development in health-care and other fields.

## IEEE Mentoring Connection Program: Mentors Needed

The IEEE Mentoring Connection is looking for "online" mentors to help guide younger IEEE professionals in career planning and professional development. Currently, 989 mentees, but only 440 mentors have registered to participate. Mentor participation is open to all IEEE members above the grade of Student Member. Shortly, we will be inviting Graduate Student Members to join the program. These members have graduated with their first professional degree and are presently in a graduate program (Masters, MBA, PhD, etc.). We will need additional mentors in the program to handle the requests from this new group. We need you! Presently our mentors represent positions in academia including Associate Dean and Professor. Various Industry positions are represented by Director of Engineering, Senior Sales Engineer, Project Manager, Corporate Owner, Consultant, R&D Technical Manager, Licensing Manager, Division Manager – Control Systems, Electrical Engineer, Vice President Research, Director – Customer Operations, Computer Scientist – Branch Chief, Senior Product Development Engineer, Design Engineer – Power and Retired.

If you have received an invitation to join the program and been thinking about it, now is the time to join. If you have already signed in as a mentor – thank you for participating. Gary Hinkle, a mentor in the program, says "Helping young engineers develop in their careers is very rewarding. Working with some of these individuals has proven to be quite a challenge, because of the diversity among those seeking mentors. I'm glad to be contributing to this program."

The program enables the mentee to select their mentoring partner online from a list of individuals who have volunteered to serve as mentors. After mentors are identified as a potential match, they are contacted and asked to begin establishing a relationship.

Interested members can visit <http://www.ieee.org/mentoring> for information on the roles and responsibilities of each mentoring partner, including additional program information and an FAQ page. Potential mentors are asked to review the time and effort commitment to the program necessary to ensure a successful mentoring partnership. To enter the program website, please go to <http://www.mentoring-connection.com> and use the IEEE Group ID "IEEE2006" to enter for the first time. Once in, you will need to set your own User ID and Password.

If you have any questions, please contact Cathy Downer, Regional Activities, at [c.downer@ieee.org](mailto:c.downer@ieee.org).



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## Nerdiness

by Donald Christiansen

We've all heard it. Over and over again. Engineers are nerds. We are socially inept. Or at least withdrawn in social circumstances. The description continues: We dress differently, have narrow, highly technical interests, do not make good conversationalists in an elevator (or anywhere, for that matter, some say).

I am not sure. I know many engineers who have broad interests and can thrive at a cocktail party. OK, so we don't glad-hand as many strangers as would a politician. Even at technical meetings, we are likely to seek out colleagues in our own fields and neglect others. The reality, I think, is that all engineers have a bit of nerdiness, and some of us have a lot.

The origins of the term nerd are unclear. Among the many suspect theories is that it stems from the acronym for the Northern Electric Research & Development laboratories, predecessor of Nortel. Baby boomers will recall it as the name of one of Dr. Seuss's fictional animals.

### Dressing for Success

There was a time when engineers employed by a corporation wore suits, button-down shirts, and neatly-knotted ties. At work, they would shed their jackets to reveal a plastic shirt pocket protector displaying an array of writing implements and possibly a small millimeter scale on a sliding pen-clip. New graduates might even sport a leather-encased K&E slide rule hanging from their belts. Young engineering professors were easily identified by their brown tweed jackets with sewn-on leather elbow patches. Professors of literature were seen in similar attire, suggesting that there was (and is) a degree of nerdiness in academics regardless of specialty.

But these historical costumes cannot alone account for the rise of the nerd. Along about seventh grade, germinating nerds were detectable by their skills in math and science. Youngsters today readily classify classmates who strive for good grades and who, in particular, show a strong interest in science and math as nerds. Amateur sociologists observe that nerds do not participate in sports, rather spending an inordinate amount of time with computer games. They are sci-fi enthusiasts. They sit at high school cafeteria tables far from those of the athletes. Nerds and jocks are incompatible, they say.

A nerd is not necessarily an engineer, and an engineer is not necessarily a nerd. He or she may be immersed in fields other than those strictly technical. Nerds are often obsessive collectors. A collector of meteorites may be a nerd, a professional historian, or both.

### Geeks

Geeks are but another form of nerd, perhaps a subset. The term is most often applied to computer enthusiasts, hackers or computer problem solvers. Many geeks are self-taught, having encountered computers in early childhood. They are enthralled with what computers can do and the problems and challenges they present. A professor at MIT predicts a growing need for computer geeks to solve the incomprehensible problems faced by computer users as computer designers and programmers add features and patches at an accelerating pace.

### Badge of Honor

The plastic pocket protector has become the classic symbol of nerdiness. It was, appropriately, invented by an electrical engineer, Hurley Smith, whose patent was issued in 1947. Today, however, there are fewer white shirts to protect. Engineers dress casually and indistinguishably from other workers, and the pocket protector may fade into memory. And with computers, who needs a pen or a pencil?

Dr. John Pojman, a professor at the University of Southern Mississippi, and perhaps a contender for nerd of the year if such an honor existed, has stepped forward to assure the pocket protector a proper place in history. He has created the Plastic Pocket Protector Museum. More than 500 of them may be viewed at [www.pojman.com](http://www.pojman.com). Among organizations and products represented are NASA, Cray Research, Grumman, several defunct divisions of RCA, engineering schools,

beer, colas, fish lures, and automotive parts. (Notably absent: specimens from the likes of Louis Vuitton, Tiffany, and Rolex.)

### Nerd Pride

Nerds, once denigrated as un-cool and clueless, may be gaining some respect among the general public. Their dress conforms more nearly to that of their non-nerd colleagues, their services are sought to help resolve computer glitches, and their knowledge of the jock world is increasing through computer gaming. Some non-nerds, it has been reported, are attempting to assume the appearance of nerds through the wearing of nerd/geek T-shirts and appropriation of nerd canons.

Soon there may be a Facebook for Nerds—or maybe not. There is a rumor about that a Nerd-Pride parade is planned for a major U.S. city. I will keep you informed.

### For more on nerds:

- NerdPoint [www.nerdpoint.com]
- Nugent, B., "Who's a Nerd, Anyway?," The New York Times Magazine, 29 July 2007.
- Kendall, L., "Nerd Nation: Images of Nerds in U.S. Popular Culture," International Journal of Cultural Studies, Vol. 2, No. 2, 1999.
- Bucholtz, M., "Why Be Normal?: Language and identity practices in a community of nerd girls," Language and Society, Cambridge University Press, 1999 (28).
- "Revenge of the Nerds," 1984 film.
- Hayes, B., "The Nerds Have Won," American Scientist, May/June 2000.

### For more on pocket protectors:

- Madea, J., "Hurley Smith's Pocket Shield, History of the Pocket Protector," IEEE History Center.
- Pocket Shield or Protector, U.S. Pat. No. 2417786, 18 March

1947.

- www.berda.com, Berda CompuGraphix, designer of custom pocket protectors.

Donald Christiansen is the former editor and publisher of IEEE Spectrum and an independent publishing consultant. He can be reached at donchristiansen@ieee.org.

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## IEEE Madison Section Election Results

The annual officer elections for the IEEE Madison Section were held at the December 2007 monthly meeting. Thanks to all members who agreed to volunteer. Congratulations to the new officers for 2008:

Chair: Ken Hartman  
 Vice-Chair: Dennis Bahr  
 Secretary: Subhadra Ganti  
 Treasurer: Mitchell Bradt  
 Mem. at Large: Clark Johnson  
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*IEEE Madison Section Elections Results*

*Nerdiness*

*IEEE Mentoring Connection Program: Mentors Needed*

*Meeting Notices*

**WHAT'S INSIDE**

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