



College of Engineering and Applied Science  
Department of Mechanical and Materials Engineering  
PO Box 210072  
Cincinnati, OH 45221-0072

## **Mechanical Engineering Graduate Seminar**

### **Cellphones, SmartMeters, Wi-Fi, and Other (Arguably) Dangerous Things in Modern Life**

**Kenneth R. Foster**

Professor of Bioengineering  
University of Pennsylvania  
Philadelphia PA 19104  
[kfoster@seas.upenn.edu](mailto:kfoster@seas.upenn.edu)

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Location: 427 ERC

Time: 11:15 a.m. - 12:10 p.m.

#### **Abstract**

The possible health effects of radiofrequency (RF) energy have been controversial for many years. This talk will review the scientific basis of this issue, focusing on one issue, the possible link between use of mobile phones and brain cancer. In addition, I will review the health controversies surrounding two additional technologies, Wi-Fi and SmartMeters. After more than a half-century of research, the only unequivocal hazards from RF energy are associated with excessive heating of tissue. Exposure limits in effect in most countries, including the U.S., are designed to protect against thermal hazards and are set at levels far above any that a person will experience in ordinary life. There is an overwhelming consensus among health agencies that no convincing evidence exists for health hazards at exposures below current international limits. However the RF bioeffects literature is inconsistent in many respects, with a scattering of reports of biological effects of RF energy at low exposure levels. The possible health effects of RF energy at low exposure levels seems destined to remain controversial in the public arena for the indefinite future. An important question is how to address public health concerns responsibly while at the same time reaping the benefits of wireless communications technologies.

#### **References**

- K. R. Foster, A World Awash with Wireless Devices, IEEE Microwave Magazine, March/April 2013.
- K. R. Foster and L. Trottier, Picking Cherries in Science: The BioInitiative Report, blog posted 2/15/13 on <http://www.sciencebasedmedicine.org>
- K. R. Foster and R. A. Tell, Radiofrequency exposures from Trilliant SmartMeter, Health Physics 105:177-186 (2013).
- K. R. Foster and J. E. Moulder, Wi-Fi and Health: Review of Current Status of Research (Health Physics, in press).

### **Biographical Sketch**

Kenneth R. Foster is Professor of Bioengineering at the University of Pennsylvania. Since receipt of the Ph.D. in physics in 1971, Dr. Foster has been engaged in studies on the interaction of nonionizing radiation and biological systems, with more than 100 papers in peer-reviewed journals on topics including biophysical mechanisms of interaction, electrical properties of biological materials, and medical applications and possible human health effects of radiofrequency (RF) fields. He is a registered professional engineer, and a fellow of the IEEE and the American Institute of Medical and Biological Engineering. He has long been involved with professional activities related to radiofrequency fields and human health, including longstanding membership on the IEEE International Committee on Electromagnetic Safety (SCC39) that sets safe limits for human exposure to RF fields and the IEEE EMBS Committee on Man and Radiation as well as membership on the Physical Agents Committee of the American Conference of Governmental Industrial Hygienists (ACGIH). He spent a sabbatical year (2000) with the EMF Project of the World Health Organization, and has consulting with a number of government and commercial firms on the issue of human health and safety as related to exposure to nonionizing electromagnetic fields. A former president of the IEEE Society on Social Implications of Technology, he has written numerous articles on social and ethical implications of technology and on the public controversy surrounding the possible health effects of RF energy. He is coauthor or coeditor of two books on risk assessment and the law.