The International Commission of Radiation Units and Measurements is pleased to announce the eighth recipient of the L.H. Gray Medal, Professor Paul C. Lauterbur. The presentation and Gray Lecture will take place at the 11th International Congress of Radiation Research in Dublin, Ireland during 18-23 July 1999.

Professor Lauterbur was born in Sidney, Ohio (USA) in 1929. After receiving his B.S. in Chemistry from Case Institute of Technology in 1951, he worked at the Mellon Institute, Pittsburgh, Pennsylvania while pursuing a Ph.D. in Chemistry which was awarded by the University of Pittsburgh in 1962. Subsequently, Lauterbur joined the faculty at the State University of New York at Stony Brook. The period at Mellon resulted in ground-breaking research in NMR (nuclear magnetic resonance) spectroscopy of $^{31}$P, $^{19}$F, and ultimately $^{13}$C. These exciting times led to the first observation of anisotropic chemical shifts in single crystals and the publication of the first NMR spectra of tin compounds. After finishing his thesis work, Lauterbur continued his pioneering work at Stony Brook. This led to the publication of the first $^{13}$C NMR spectra of a protein in 1970.

This research was of outstanding quality and served to develop a research tool pervasive in modern chemistry. In 1971 Lauterbur produced a sequence of discoveries that revolutionized modern image science. Specifically, Lauterbur recognized that NMR signals could be employed to generate a new type of image. Independently creating a new image reconstruction technique, Lauterbur published the first NMR based images in 1973 (Nature 242). During the next ten years, Lauterbur and co-workers helped to establish the foundations of what is now known as modern MRI (magnetic resonance imaging). These innovations included projection reconstruction, selective excitation, spectroscopic (chemical shift) imaging, and fluid flow measurements. Moving from two-dimensional slice images to three-dimensional image reconstruction was realized and 3D visualization of solid objects achieved. This astounding period of scientific productivity is widely
recognized as forming the fundamentals of medical MRI science and has resulted in the routine use of MRI for the diagnosis of disease.

Professor Lauterbur joined the faculty of the University of Illinois in 1985 where he heads the Department of Medical Information Sciences and serves as Distinguished University Professor in the College of Medicine, and as Center for Advanced Study Professor of Chemistry and of Molecular and Cellular Physiology, and in the Biophysics and Computational Biology, Neuroscience, and Bioengineering programs. During the last ten years, Lauterbur's work has focussed upon NMR microscopy. This effort has allowed images with spatial resolutions below 10 micrometers. Continuing the push to smaller spatial regions, recent work includes magnetic labeling of cells and the development of molecular contrast agents based upon cascade polymers. Related to these efforts, Lauterbur is now concentrating on micro- and macro-scopic human neural imaging dealing with cognition, neuronal connectivity, and sensory mapping employing in vivo NMR spectroscopy.

The ICRU is honored to recognize Professor Lauterbur's contribution to medical, biological, and chemical sciences. In many ways, this award indicates the recent emphasis of the ICRU on image science and medical applications. Besides the Gray Medal, Lauterbur has received several honorary degrees including those from the University of Liege, Carnegie Mellon University, and the University of Mons-Hainaut as well as scientific achievement awards such as the Röntgen Medal, the National Medal of Science, the American Physical Society Prize in Biological Sciences, and will be awarded the Gold Medal of the European Congress of Radiology (1999). Professor Lauterbur is a member of the National Academy of Sciences (US).