Abstract: This talk presents an overview of some topics of current interest in the area of nonlinear optics. The intent of the talk is to establish the excitement of nonlinear optics as a research area and to describe some of the important applications of nonlinear optics that are currently under development. The choice of topics reflect the speakers personal interests, which include the use of nonlinear optical methods to control the group velocity of light, studies of quantum imaging (the use of quantum states of light to allow for improved image formation), and studies of nonlinear optics at the nanoscale.

Bio: Professor Robert W. Boyd received the B.S. degree in physics from MIT and the Ph.D. degree in physics from the University of California at Berkeley. His Ph.D. thesis was supervised by Charles Townes and involves the use of nonlinear optical techniques in infrared detection for astronomy.

Professor Boyd joined the faculty of the University of Rochester in 1977. He is currently the M. Parker Givens Professor of Optics and Professor of Physics. His research interests include studies of "slow" and "fast" light propagation, quantum imaging techniques, nonlinear optical interactions, studies of the nonlinear optical properties of materials, and the development of photonic devices including photonic biosensors.

Professor Boyd has written two books, co-edited two anthologies, published over 250 research papers, and been awarded five patents. He is a fellow of the American Physical Society (APS) and of the Optical Society of America (OSA). He is a past chair of the Division of Laser Science of APS and has been a member of the Board of Directors of OSA. He has also served as an APS representative and chair of the Joint Council on Quantum Electronics (it is joint among APS, OSA and IEEE/LEOS). Prof. Boyd has served as a member of the Board of Editors of Physical Review Letters and is currently a member of the Board of Reviewing Editors of Science Magazine. Professor Robert W. Boyd received the 2009 Willis E. Lamb Award for Laser Science and Quantum Optics. Willis E. Lamb Award for Laser Science and Quantum Optics [link 1, link 2].