Professional Biography: John F. Holzrichter, PhD
Many of Dr. Holzricher's activities are represented by the images on the left of the master webpage.

Dr. Holzrichter received a B.S. with honors in applied mathematics and engineering physics from the University of Wisconsin in 1964. He attended the University of Heidelberg as a Fulbright Fellow in 1964-5. He then earned an M.S. and a Ph.D. in physics from Stanford University in 1971. He had a remarkable research experience at Stanford, guided by his thesis advisor Prof. Arthur Schawlow (co-inventor of the laser), and other gifted professors and colleagues. His thesis involved designing and using the first tunable laser at Stanford to optically excite and measure magnetic interactions in transparent magnetic materials. In 1972 he joined the UC/Livermore Laboratory to design and build very high power lasers to demonstrate the ICF (Inertial Confinement Fusion) concept. The objective was to understand this recently invented means of fusion energy production. First, he and his team built a sequence of fusion lasers -- Janus, Argus, Shiva, Novette, NOVA, and early designs for the now-working NIF laser. Each one was >10x more capable than the prior laser. At the same time, they began the laboratory's fusion-target experimental program, in which many of the first ICF concepts were first demonstrated. For a review of this work see "Monojoules to NIF" on this website. Today in 2014, the NIF laser is routinely directing short pulses of light, with over 1 million joules of blue light energy being directed onto fusion and other targets. The applications range from energy production, to materials research, to astrophysics. In 1987, he took on a demanding role by directing and building the Livermore Laboratory's internally fund R&D program (IR&D). The objective was and remains the enabling of new, high-risk idea exploration. With careful selection and funding, at appropriate scale for a large laboratory, this program has enabled many valuable outcomes. For example, their support for experimental studies of fly-wheel energy storage, materials response under extreme conditions, demonstrations of unusual optical and ultra-high-power laser systems, prototyping of new parallel computer systems and related software, creation of unusual instruments such as ultra-sensitive detectors for bio-pathogens, and a support of large-scale field-experiments including some of the most successful national environmental cleanups during the 1990s and 2000s. In 1999, he retired from LLNL. He was then elected President of the Fannie and John Hertz Foundation (www.hertzfoundation.org). The Foundation has been identifying, selecting,

and supporting technical graduate students since 1963, including Dr. Holzrichter in 1968. Through purposeful outreach programs, national seminars, an accessible web site, and annual Fellows-meetings the Foundation is increasingly appreciated and supported by many generous donors. It has supported over 1100 gifted technical leaders in the applied physical, biological, mathematical, and engineering sciences at the major universities, government, and companies in the US. Dr. Holzrichter's contributions were to maintain the Foundation's effectiveness during two of 2 the most serious financial crises that the US has experienced (in 2001 and 2008). He put in place means to rebuild its endowment, modernized its governance and operations, and raised its awareness in the national technical community. In 2009, after 10 years of very intense and productive work, he decided to retire again, and was honored as President Emeritus of the Hertz Foundation. Besides the major programs, he has pursued active R&D programs in acoustics, optics, mechanics, thermo-electricity, and other topics (e.g., see the list of papers, lectures, and images on this website). In the 1970s, he and his colleagues invented a large number of the concepts enabling very high power, pulsed lasers of all types. In 1996, he invented a new speech recognition and sound synthesis concept, which has been widely published, patented, and discussed. For example, it provides means for minimizing noise pollution from cell-phone users. In 2014, he described a new way to use nuclear power to generate radiant IR light to illuminate a thermo-photo-voltaic electrical cell for generating electricity. He and colleagues from UC Berkeley built a prototype system, supported by an award from the Keck Foundation in 2014. Experiments are underway in 2016.

He continues as a member of several professional societies, he is a Fellow of the AAAS, and he has published over 150 papers, monographs, and lectures on lasers, fusion, force microscopy, research management, and speech recognition. In a recent lecture, Oct. 2010, he discussed S&T management at the International University Presidents' forum in Seoul, Korea, in a talk titled "Universities and S&T Expectations". In his spare time, he enjoys oil painting, music, cooking and traveling with his wife, children, and grand children.