



MIT

RESUME



COLUMBIA UNIVERSITY

BIBLIOGRAPHY

PATENTS

BERNARD EASTLUND, PH.D

EDUCATION

Bachelor of Science, Massachusetts Institute of Technology, Physics, 1960
 Doctor of Philosophy, Columbia University, Physics, 1965

AWARDS

Special Achievement Award, U. S. Atomic Energy Commission, [1970](#)
 (For Fusion Torch Invention)

IR100 Award 1974
 (For Invention of Microwave Lamp)

Certificate of Recognition, U. S. House of Representatives, 2003
 (For contribution to Homeland Security Technology)

EXPERIENCE

2000-Present: Founder/ Chief Technical Officer
[UV Alliance, Inc.](#), San Diego, CA

UV Alliance, Inc. has developed innovative new approaches to ultraviolet curing of inks and coatings. 3D curing innovations for products the size of golf balls to automobiles were developed. Target markets include medical devices, chip production, printing, and various other commercial applications.

1996-Present: Founder/Chief Technology Officer
Eastlund Scientific Enterprises Corp, Austin, TX

ESEC is a consulting firm devoted to development of new technology based commercial systems and products. Current projects include: Development of a high altitude plasma ignited by cosmic rays or micro meteorites for telecommunications and as a guide star for adaptive optics applications in telescopes; Materials processing innovations include a table top sized plasma processor that can provide inexpensive, rapid production of sophisticated thin films. Single walled carbon nanotubes can be inexpensively produced with the table top sized Plasma type III Ga UV LED's are under study. Photonics applications include innovative combinatory technologies for LED and optical fiber systems. Novel energy sources under investigation include in-situ production of electricity and hydrogen in tar sand and coal deposits. Femtosecond IR laser power supplies are under study. Also developing new concepts for detection of pathogens and chemicals with low false positives such as the use ICOS (integrated cavity optical

2000-2005: Chief Technical Officer
[Novatron, Inc.](#), San Diego, CA

Novatron Inc. developed innovative new products for Homeland Security and was a participant in DARPA's Immune Building program.. Eastlund was a founder and Chief Scientist. for Novatron Inc. He was co-inventor of the bioprotector technology that has been installed in the Pentagon Shield II Exercise test program. The bioprotector technology reduces UV power requirements for 6 logs kill of spores by a factor of 100, which was demonstrated in tests with *Bacillus subtilis* at Battelle's West Jefferson facility. Developed mathematical models were developed for UV kill in HVAC ducts. Eastlund participated in vaccine production projects and used photonics physics for use of integrated cavity output spectroscopy for identification of organisms using infrared radiation.

1984-1995: President and Chief Technology Officer
Production Technologies International Corp, Houston, TX

Eastlund founded Production Technologies International Corp. He Invented, developed and commercialized downhole microwave and RF electric heater systems for dissolution of [paraffin](#) in oil and gas wells. Customers included Shell, Chevron, Exxon and various smaller independents. Prepared computer simulation code for downhole microwave heat flow as well as for operation of down hole submersible pumps. Marketed Mil 1750 microprocessor using silicon on sapphire (SOS) technology with an operating temperature of 530 of. Co-authored articles in the Oil and Gas Journal with Shell Oil Co. resulting in worldwide recognition for the technology.

1984-1987: SR Technology Consultant
Atlantic Richfield Corporation, Plano, TX

Eastlund developed and implemented strategy for commercial use of 23 trillion cubic feet of North Slope natural gas, which led to the development of the HAARP project by the DOD. (A large microwave phased array in Alaska) He developed and was awarded three patents for military and commercial uses of the gas. He was principal investigator of a DARPA Defense Department contract and various ARCO sponsored research contracts. The technologies involved a time domain electromagnetic exploration system, a large phased array ionospheric heater design and research programs on ELF and VLF communications. He assisted in the founding of [APTI corporation](#).

1979-1984: Vice President Energy Research
BDM Corporation, McLean, VA

Eastlund was Vice President for Energy Research. He was responsible for developing new consulting business in all energy sectors. .Managed projects including development of a microwave synfuels research lab for Exxon in Baytown, Texas, sensor concepts for measurement of pits in oil and gas well production tubing, and microwave backscattering sensors. Performed an EPRI study of industrial efficiency of electrical applications in the packaging industry. Responsible for large computer simulation validation project at the Morgantown Energy Technology Center.

1974-1979: Chief Technology Officer
Fusion Systems Corporation, Rockville, MD

Eastlund was the inventor of core microwave lamp technology for Fusion Systems Corporation, a manufacturer of UV curing systems for the packaging industry. He was responsible for the ongoing development and improvement of component technologies and for driving product functionality to new niche markets. This technology played a key role in development of optical fibers. Many of the applications are in the food packaging industry. Developed one of the first electron cyclotron resonance sputtering systems for Perkin-Elmer. (Note Fusion Systems Corporation was publicly listed and sold in 1997 for \$193 million. It is now owned by Spectris Systems and is operating as Fusion UV Systems Inc.)

1968-1974: GS-15
U. S. Atomic Energy Commission, Germantown, MD

A program manager for the controlled thermonuclear research branch of the division of physical research. Principal responsibility for the \$7 million university research budget including all plasma diagnostic programs.

Assisted in the coordination of activities in Fusion Research at four national labs. Organized conferences on major areas of physics and materials research. Invented the Fusion Torch for which he received a Distinguished Service Award. Co-authored an article in Scientific American on Controlled Fusion Research in January, 1971.

**1965-1968: Post Doc Fellow, Plasma Physics, Department of Engineering
Columbia University**

Dr. Eastlund was in charge of the Q-machine program in the Plasma Physics Department. He developed a new technique for purification of Alkali Metals.