

**ANTON C. GREENWALD, Ph.D.**

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**Seeking:** Consulting position as proposal/grant writer. Also full-time or part-time as Senior Scientist or Engineer or Principal Investigator.

**Technical Field:** Thin films (deposition, processing, patterning) for semiconductors, optics, mechanical and thermal protective coatings MEMS devices and sensors and spectroscopy.

**Experience:**

2008-2013: Agiltron Inc. - Senior Scientist - Primarily responsible for writing and winning research proposals to NIH, DOD, DOE, NIST, DHS. Principal Investigator for work on micropatterned radiation detectors, neutron detectors, spectroscopic gas sensors, metamaterials, MEMS devices, IR sensors and applications, alternate energy sources.

1999-2008: ICX Photonics - Senior Scientist – Developed thin film detectors for MEMS spectroscopic gas sensors, design deposition systems, analyses, device fabrication, documentation. Finite element modeling of thermo-mechanical and electrical properties. Photonic crystal fabrication. Wrote and won research proposals to NIH, DOE, DOD

1990 – 1999: Spire Corporation, Senior Scientist and Manager of Electronic Ceramics  
Developed equipment and processes for deposition of thin film ceramics for application to optics, optoelectronic devices, hard coatings and thermal barriers using chemical vapor deposition (CVD), evaporation, ion beam processing, other vacuum processes. Also developed rare-earth doped semiconductors and micro-fabrication for radiation detectors.

Directed research with following materials Si, a-Si:H, GaAs, GaAs:Er, InP, ZnSe, CdTe, HgCdTe, Pb-Ti-O, Pb-Zr-Ti-O, Pb-Ge-O, Y-Ba-Cu-O, Sr-Ba-Nb-O, Sn-O, TiO<sub>2</sub>, TiN, LaN, Zn-O, ZrO<sub>2</sub>, ZrO<sub>2</sub>:Y<sub>2</sub>O<sub>3</sub>, Al<sub>2</sub>O<sub>3</sub>, WO<sub>3</sub>, and MoO<sub>3</sub>.

Wrote and won over 50 proposals for this research, typically exceeding \$1 million per year, 85% SBIR (Small Business Innovative Research) or STTR Phase I and Phase II. Supervised 1 – 3 technicians and one staff scientist.

1981 – 1990 Spire Corporation, Senior Scientist, Project Manager  
1975 – 1981 Spire Corporation, Staff Scientist

**Education:**

Ph.D., Physics, University of Maryland, 1975      Doctoral thesis on numerical simulation of electron ring collective acceleration of ions. Teaching and research assistant.

**Skills:**

Writing reports proposals, technical publications, manuals, project and business plans.

Finite element modeling (ANSYS)

Expert in chemical vapor deposition, metalorganic chemical vapor deposition (MOCVD)

Low pressure, high pressure, and plasma assisted CVD

Plasma processing, laser and electron beam processing

Evaporation: thermal, electron beam, ultrahigh vacuum, reactive, ion beam assisted, dual source

Ion implantation

Rapid thermal heating

Familiar with semiconductor device design and processing especially as needed to test film properties. resistors, diodes, transistors, mask design, photolithography, testing, contacts.

Expert in characterization techniques including optical microscopy, scanning electron beam microscopy, transmission electron beam microscopy, energy dispersive spectroscopy, wavelength dispersive spectroscopy, auger spectroscopy, secondary ion beam spectroscopy, Rutherford backscattering spectroscopy, x-ray diffraction, nuclear activation analysis, Knoop hardness testing, scratch testing, film adhesion, wear testing

**Other Information:**

Five patents and over 89 published research papers, CV available upon request. Familiar with WINDOWS related software such as Word Perfect, Word, Excel, Access, Visio and scientific software such as Sigma Plot, CARD (computer aided design of experiments), ANSYS. Member of the Materials Research Society. United States citizen with past security clearance from DOD.