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Technical/Scientific Consultant
PDH Applied Physics, LLC
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Training and Employment

Ph.D., Experimental Solid-State Physics, Northwestern University

Formerly Assistant/Associate Professor of Physics, Cleveland State University

Directed research on electrical/optical/thermal properties of materials, built and operated thin-film coating facility for development of space-durable protective coatings.

At Cleveland State: 23 years' experience as Principal Investigator of cooperative research agreements with NASA Glenn Research Center for R&D on space-durable coatings and materials. Extensive collaboration with NASA engineers, materials scientists, and chemists. Total NASA funding approximately \$2.5 million, for on-campus research and student internships at NASA Glenn Research Center.

Currently: Independent consultant, PDH Applied Physics, LLC

Skill Sets

Versatility – can understand and come up to speed quickly on unfamiliar technologies

Teamwork – have worked smoothly in groups of people with a wide range of disciplines (engineering, chemistry, medical physics, etc)

Proposal preparation: Extensive Federal grant-writing experience, recent SBIR and NineSigma writing experience

Technical literature search: Skilled at finding relevant journal articles, extracting useful information, and presenting to product-development people

Specific technical skill areas include:

Electrical, optical, magnetic, and thermal properties of materials

Thin-film coatings – properties and coating methods

Optical coatings design

Nuclear radiation transport in materials

Laboratory equipment and computer data analysis

Some Recent Projects

- Grant proposal writing/editing: Nine SBIR, STTR and university research proposals. This included searching and interpreting relevant technical research papers.
- Helped a small business investigate the feasibility of a wide-angle antireflective coating based on novel optical techniques. I performed computer simulations of optical properties of candidate coating designs.
- Consulting for a small materials R&D company looking for a space-radiation-resistant, ultraviolet-transmitting thin film: I reviewed published data (mostly on thick samples) and used this to predict performance of thin layers of the same materials.
- R&D on durable transparent conducting films for lunar/Martian exploration – deposited films and measured electrical and optical properties at Cleveland State in collaboration with a NASA mechanical engineer. (Funded in part by NASA).
- Participated in project to estimate astronauts' cancer risk from space radiation. (Director, Timothy Kinsella, M.D., Oncologist, University Hospitals of Cleveland). I reviewed published papers on tissue response to laboratory radiation, combined the results, presented and interpreted them for the project members.

- Edited and compiled 164-page Self-Study for accreditation of Cleveland State's Medical Physics Master's degree program (in conjunction with the Cleveland Clinic). This job included close collaboration with the Clinic's medical physicists. We got the accreditation.