

ERTEN ESER

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EDUCATION

- Ph.D., Materials Science, Massachusetts Institute of Technology, June 1978
Thesis under Professor R. E. Ogilvie on “Plasma Characterization in Sputtering Processes and the Deposition of Tungsten Carbide-Cobalt Coatings”.
- S.M., Metallurgy (Solid State Physics), Massachusetts Institute of Technology, June 1972
Thesis under Professor A.F. Witt on “Thermoelectric Power of Indium Antimonide”.
- Engineer ECS (Ceramics), Physics, chemistry and technology of non-metallic solids, École Nationale Supérieure De Ceramique Industrielle, Sèvres, France, June 1970.
Thesis on “Sintering of Calcium Stabilized Zirconium Oxide”.

EXPERIENCE

- 1998-Present Associate Scientist
Institute of Energy Conversion, University of Delaware, Newark, DE
- Managed the NREL sponsored program for the development of copper indium selenide based photovoltaics on polymer web substrates. Directed a number of projects on flexible copper indium selenide photovoltaics funded by DuPont and by other companies through SBIR contracts from various agencies. Coordinating Institute’s participation, as subcontractor, in Global Solar Energy LLC’s TFP and PVMat programs for the Development of Copper Indium Selenide based photovoltaics on flexible substrates. Managed amorphous silicon research program focusing on the development of crystalline p-layers.
- 1995-1998 Visiting Research Scientist
Institute of Energy Conversion, University of Delaware, Newark DE
- Managed amorphous silicon research program achieving 25% improvement in efficiency in two years. Coordinated Institute’s participation in a DARPA sponsored consortium for the Development of Copper Indium Selenide based Photovoltaics on flexible substrates. Designed, constructed and put in service pumping, gas flow, and control systems of a Hot Wire Chemical Vapor Deposition Reactor for Silicon film deposition.

1992-1995 Consultant

Prepared the business plan for an amorphous silicon photovoltaic module manufacturing operation with detailed analysis of the technology, economics, marketing and investment attractiveness. Conducted negotiations for the implementation of this project in Turkey with the Turkish government, investment bankers, and private investors. Prepared a critical analysis of the manufacturing potential of Copper Indium Selenide and Cadmium Telluride based photovoltaic modules. Consulted for a research organization in the optimization of the amorphous silicon solar cell deposition system. Consulted for DOE's office of Program Analysis as a peer reviewer in amorphous silicon and polycrystalline thin-film devices and materials.

1990-1992 Director, Technology
Advanced Photovoltaic Systems, Inc., Princeton, NJ

Directed the operations of the Manufacturing, Process Engineering, Design and Development, and Quality Assurance/Quality Control divisions. Prepared and implemented Company's 1992 strategic technology plan which included the procurement, installation, testing and start-up of the Company's 10 MW_p/year manufacturing facility at Fairfield, CA. Organized the Design and Development division, hired 6 mechanical engineers and 5 draft-persons, defined the division's mission and objectives. Introduced two new products: 25 W_p, 12V and 50 W_p, 12 V amorphous silicon PV modules. Developed and implemented processes to improve throughput and yield of module encapsulation line.

1990-1991 Manager, Amorphous Silicon Development
Advanced Photovoltaic Systems, Inc., Princeton, NJ

Managed the development of the amorphous silicon photovoltaic panel manufacturing line. Demonstrated the commercial manufacturability of amorphous silicon photovoltaic modules at 75 W_p per plate level with 95% yield.

1982-1990 Senior Scientist
Chronar Corporation, Princeton, NJ
(Chronar Corp. was reorganized as APS, Inc. on December 1990).

Managed the "Analysis and Testing" division. Project coordinator of the development of an automated amorphous silicon photovoltaic module manufacturing facility having a capacity of 10 Mwp/ year. Designed the amorphous silicon deposition systems for this project and oversaw their fabrication, assembly, and testing. Manager of a research program on the Copper Indium Selenide based solar cells and modules. Developed high speed and high quality aluminum laser scribing process. Principal investigator of a three year research contract awarded by the Solar Energy Research Institute. Investigated Fe

based redox battery systems for possible application in photovoltaics. Studied the “Light Induced Instabilities” in amorphous silicon thin films. Investigated interfacial instabilities in the amorphous silicon photovoltaic modules. Worked on the design and construction of 1 Mwp/year amorphous silicon module manufacturing facility. Principal investigator of a three year research contract awarded by the Solar Energy Research Institute. Set-up and managed the materials analysis laboratory with capabilities such as X-ray diffraction, SEM/EDAX, SAM/SIMS, UV-VIS-IR spectroscopy and optical microscopy.

1981-1982 Research Scientist
Arco Solar, Inc., Chatsworth, CA (Presently Siemens Solar, Inc.)

Worked on the development of Copper Indium Selenide/Cadmium Sulfide solar cells in the areas of materials characterization, Cadmium Sulfide evaporation, cell design and analysis.

1978-1981 Associate Scientist
Institute of Energy Conversion, University of Delaware, Newark, DE

Investigation of stability related problems in Copper sulfide/Cadmium Sulfide Solar cells such as grain structure of Cadmium Sulfide films, optical properties of Copper Sulfide films, interdiffusion phenomena and junction morphology in micro-scale. Protection of Copper Sulfide surfaces against oxidation by e-beam evaporated glass layers. Setting-up and operating a materials analysis laboratory with capabilities such as x-ray diffraction, SEM/EDAX, and SAM/SIMS.

1976-1978 Intern
C.S. Draper Laboratory, Cambridge, MA.

Worked in a program to develop coatings to improve friction and wear characteristics of gas bearing surfaces in inertial guidance instruments where the structural material was beryllium.

1976-1978 Teaching Assistant
Massachusetts Institute of Technology

Teaching Assistant in “Electron Optics” and “Materials Laboratory” courses.

1969 Summer Intern
Société Le Carbon Lorraine, Gennevilliers, France

Prepared a feasibility study of the automation of “Riedhammer” furnaces used in the graphitization of carbon.

PATENTS

1. U.S. Patent 4,592,558 dated 1987, "Counteraction of Semiconductor Impurity Effects," Inventors: A.E. Delahoy, V.L. Dalal, E. Eser.
2. U.S. Patent 6,562,405 dated 2003, "Multiple-Nozzle Thermal Evaporation Source," Inventors: E. Eser, G.M. Hanket.
3. U.S. Patent 6,676,994 dated 2004, "Method for Producing Thin Films," Inventors: R.W. Birkmire, E. Eser, G.M. Hanket, B.E. McCandless.
4. PCT Application 60/620,352 dated 2004, "Formation of Selenide, Sulfide or Mixed Selenide-Sulfide Films on Metal or Metal Coated Substrates," Inventors: E. Eser, S. Fields.

AFFILIATION

American Vacuum Society
American Society for Metals

LANGUAGES

English, French, Turkish