AccuStrata
Enter The Nano World

5000 College Avenue, Ste 3102, College Park, MD 20740
Phone: (301) 314 2116; www.accustrata.com;

One-year Post-doc Position through ASEE/NSF at AccuStrata in College Park, MD

The Small Business Postdoctoral Research Diversity Fellowship collaborative program between American Society for Engineering Education (ASEE) and The National Science Foundation (NSF) aims to encourage creative and highly-trained recipients of doctoral degrees in NSF-supported science, technology, engineering and mathematical disciplines to engage in hands-on research projects in their areas of expertise at the kind of small innovative businesses that historically have fueled the nation's economic regime.

This fellowship program offers active Phase II Small Business Innovation Research (SBIR) participating companies the opportunity to attract top scientific and technological talent. Each research fellow will receive a stipend of at least $75,000 plus health insurance benefits. The program is administered by the American Society for Engineering Education (ASEE) with support from the National Science Foundation (NSF),

The Post-Doc Opportunity

Project Title: Real time optical monitoring and process control of thin film manufacturing

Host company: AccuStrata - www.accustrata.com
Address: 5000 College Avenue, University of Maryland Research Park, College Park, MD 20740;
Principal Investigator: Dr. George Atanasoff, President; gatanasoff@accustrata.com; 301-314-2116
Conditions for applying: US citizen and US permanent residents only;
How to apply: Visit https://nsfsbir.asee.org/apply/sessions/new and follow instructions
Number of Post-Doc Fellows: 1
Duration: One year with possibility for additional one-year extension
Open for Applicants: Immediately

Description of the Post-Doc Position

This individual will be involved in dynamic process control of surface modification processes such as thin film deposition. He/she will develop hardware solutions for real-time optical monitoring of growing films, installations on manufacturing lines, software development for thin film analysis, databases, response surface modeling and adaptive process control. He/she will study variety of thin film manufacturing processes: multi-, and mono-crystalline silicon solar cells, CIGS, SiNx, GaN and other wide-band semiconductor thin films and study of their optical and chemical properties. The person will participate in 1) developing a technology for deposition of gradient index thin film coatings for PV application on a solar cell manufacturing line, 2) technology for real-time analysis of thin films under deposition 3) other projects based on business at hand.

Desired Expertise

This individual will be an important member of our R&D team for our patented intelligent optical monitoring and process control technology for thin film applications. We expect him/her to be highly detail oriented, skillful and

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knowledgeable individual in Physics and Material Science. **Specific experience in surface modification processes such as thin film deposition in vacuum, surface etching and/or printing with emphasis on Metrology, process control and software development is required. Programing skills in Java or another object-oriented language are required.** LabView skills are desirable. Skills in Optics and Optical Metrology are very desirable. Previous involvement in thin film deposition for precision optics, semiconductor, LED or solar application is also desirable. The person must demonstrate sufficient willingness and organizational skills to guide a team of software engineers until a practical software solution is developed, tested and validated in real process.

The preferred person would be a self-starter and team-builder of an interdisciplinary team of scientists and engineers. Any management or business experience is highly desirable. He/she will have an open mind and desire to live within and understand different world cultures. He/she should be willing to travel and live for a period of not more than one month at a time in another location in USA, Asia (China and India) and/or Middle East and conduct part of the research there, if needed. Our intention is to offer a permanent position to the suitable person after the expiration of the post-doc period.

SBIR Award Abstract: Real time optical control system for thin film solar cell manufacturing

This Small Business Innovation Research (SBIR) Phase IIB project is directed at developing a real time process control system for improving manufacturing of thin film products such as thin film solar panels, solid state lighting, touch screen displays, optics and telecommunications. Photovoltaics are a vital component of the renewable energy mix but they need to be more efficient to be competitive against existing fossil fuel approaches.

The control system we are developing can dynamically control and correct the film deposition process to keep each product within its targeted specification, reducing and even eliminating rejects. It allows manufacturing of more consistent and uniform solar panels resulting in higher solar conversion efficiency, reduced cost and increased manufacturing yield. The objective of this Phase II is to further develop and improve the prototype system developed under Phase I and IB and validate it for two most common thin film solar panel manufacturing configurations. This project will complete the hardware / software development and validation for monitoring film growth for amorphous silicon solar panel manufacturing. Phase II will remove technical risk allowing fast commercialization of the monitoring system. Additional development will be performed to finalize the control component of the system.

The broader impact/commercial potential of this project is to advance the scientific understanding of how thin films grow during deposition. It will help thin film solar panel manufacturers develop higher quality products. The system will improve production accuracy, reduce production flaws and make the manufacturing process less susceptible to process parameter drifts and errors, especially for advanced thin-film products. The commercial impact of the project is that manufacturers will (i) increase solar panel efficiency and manufacturing yield, (ii) reduce manufacturing cost, and (iii) increase revenue and profit. The proposed technology provides an innovative platform solution that can be further improved in order to achieve waste-free thin film manufacturing with little human interaction.