Postdoctoral or Post Master's Research Associate in Carbon Fiber Research and Development

Materials Science & Technology Division
Physical Sciences Directorate
Oak Ridge National Laboratory
Oak Ridge, Tennessee

ORNL08–91–MSTD

Project Description:
The Polymer Matrix Composites Group at the Oak Ridge National Laboratory (http://www.ornl.gov) has an opening in development of low cost carbon fiber beginning immediately. This full-time position is focused primarily on investigation and implementation of new carbon fiber precursors and engineering the fiber-matrix interface to achieve desired composite properties. It requires a strong background in surface engineering of fibrous and/or particulate carbon materials, dispersion of nanomaterials in polymers, and characterization of the results. Although a Post-Doc appointment is anticipated, ORNL will also consider Post-Masters appointments and permanent position applicants having the combination of education, skills, and experience as described below.

ORNL is conducting research on the development of new carbon fiber precursors, conversion processes, post-treatment processes, and downstream manufacturing. Advanced techniques investigated include microwave processing, plasma processing, electron beam processing, ultraviolet processing, and/or other advanced materials processing methods to economically convert conventional PAN precursor and alternative precursors into finished carbon fiber, as well as to post-treat the fibers, at high line speeds. A precursor development and/or fiber-matrix adhesion researcher is needed to work on material and process development and scaling, working closely with other team members and reporting directly to the Principal Investigator. The preferred candidate should have training and/or experience in surface engineering of carbon materials for compatibility with polymer matrices, including a graduate degree in an appropriate field of science or engineering. Additional desirable expertise includes, in approximately prioritized order, polymer processing; polymer chemistry; carbon nanomaterials dispersion; carbon and/or composite materials characterization (e.g., XPS, FTIR, diffraction, mechanical testing); plasma chemistry, physics, and engineering; composite materials manufacturing; data analysis; design of experiments; data acquisition and controls; and/or microwave technology. The candidate must demonstrate exceptional initiative and ability to solve difficult technical problems with minimal technical direction. Dedication, teamwork, and communication skills are also highly desired and valued. Duties will include (1) investigating and optimizing fiber-matrix adhesion between carbon fibers made from various polymer precursors and selected polymeric matrices (with emphasis on commodity resins), specifically including different surface treatment methods and evaluation/analysis of surface treatments on carbon fibers; (2) precursor fiber development from nontraditional precursor materials; (3) conversion process development; (4) equipment/device design/specification, modification, and/or oversight of equipment manufacturing and installation, for scaling that achieves high

throughput, availability, and reliability for specific applications and performance targets; and (5) technical interactions with carbon fiber experts. In addition to these responsibilities, the job holder will interact regularly with automotive OEMs, automotive suppliers, DOE personnel, and other partners or sponsors; prepare and present periodic reports documenting research and development; and assist in developing and implementing related follow-on projects and strategy for transferring developed technology.

Qualifications:
This position requires a Ph.D. or master's degree in materials science, engineering, chemistry or related field. Applicants must be citizens or legal permanent residents of the U.S. or Canada. Applicants cannot have received the most recent degree more than five years prior to the date of application and must complete all degree requirements before starting their appointment.

How to Apply:
Qualified applicants must apply online at https://www2.orau.gov/ORNL_POST/. All applicants will need to register before they can begin the online application. For complete instructions, on how to apply, please see the instructions at http://www.orau.gov/orise/edu/ornl/ornl-pdpm/application.htm. When applying for this position, please reference the position title and number.

Salaries will be competitive.

This appointment is offered through the ORNL Postgraduate Research Participation Program and is administered by the Oak Ridge Institute for Science and Education (ORISE). The position is open to citizens or legal permanent residents of the US or Canada without regard to race, color, age, religion, sex, national origin, physical or mental disability, or status as a Vietnam-era veteran or disabled veteran.