

Work Duties in Detail for 2022-02 Recruitment Announcement of the IBS Center for Multidimensional Carbon Materials

□ Recruitment Details

Work Position	Area No.	Area	Required Qualification
Postdoctoral Research Associate	[A]	-synthesis of high crystallinity carbon materials, highly crystalline carbon and/or boron nitride thin-film deposition (Materials Group led by Director Rodney S. RUOFF/Senior Research Fellow SEONG Won Kyung)	<p>- Degree: Ph.D. (Eligible to apply: Those who do not exceed 5 years after obtaining a doctoral degree or those who are expected to obtain a doctoral degree within 3 months by the time of appointment)</p> <p>- Major: Physics/Chemistry/Materials Science</p> <p>Preference: Doctoral experience in the study of sp^3 or sp^2-sp^3 hybrid carbon (or related, such as BN and/or CBN) films, metal deposition by PVD or other methods, epitaxial thin film growth, thus being well-positioned to synthesize high crystallinity carbon (or related, such as BN and/or CBN) thin films. Strong background in vacuum systems (PE-CVD, PLD, sputtering, others), structural analysis (diffraction, spectroscopies), metal alloying such as through molten metals; experience with a wide variety of experimental methods used for the study of epitaxial thin film growth, experienced with electrical property measurements, SEM, (perhaps also TEM), EDS, XPS, Raman and other spectroscopies, X-ray diffraction, is highly desired.</p> <p>We seek candidates for a postdoctoral fellow position to tackle significant challenges in novel carbon and related materials (such as BN and CBN) and other related projects. The candidate likes/wants to discover and characterize new materials based on physical or chemical vapor deposition and associated methods. CMCM and UNIST expand thin film deposition and characterization. Candidates should thus have deep experience with:</p> <ol style="list-style-type: none"> 1. Study of epitaxial material growth through deposition in vacuum systems. 2. Study of physical properties (electrical, mechanical, magnetic, optical) of such thin film materials. 3. Macro and microcrystalline structural analysis. Experience in synchrotron beam-based methods is welcomed given proximity of the UNIST beamline at the Pohang Accelerator (PAL) facilities. 4. Various types of spectroscopies and methods to characterize the properties of sp^3 or sp^2-sp^3 hybrid carbon and related (BN and/or CBN) materials. <p>Ideal candidates will (i) be fluent in English, (ii) have recently received a Ph.D., (iii) have experience writing manuscripts, (iv) exhibit a strong motivation to do basic science research in pioneering areas and to delve deeply into fundamental scientific issues, including as exemplified during their Ph.D. studies. The candidate should have a demonstrated history of thinking for themselves, strong self-initiative, an excellent work ethic, working well individually and at times with others, and speaking and writing English well.</p> <p>The CMCM has extensive thin film fabrication and characterization facilities that are augmented by further capabilities at UNIST, and sophisticated beam line capabilities at the Pohang Advanced Light source (PAL), nearby. It is expected that the candidate hired will work very closely with Senior Research Fellow Dr. Won Kyung Seong as well as Prof. Ruoff.</p>

Postdoctoral Research Associate	[B]	<p>-carbon materials, electrochemical synthesis, high temperature electrochemistry (Team led by Team Leader LEE Sun Hwa)</p>	<p>- Degree: Ph.D. (Eligible to apply: Those who do not exceed 5 years after obtaining doctoral degree or those who are expected to obtain a doctoral degree within 3 months by the time of appointment)</p> <p>- Major: Electrochemistry/Chemistry/Material Science</p> <p>- Preference: Doctoral experience in study of carbon materials, metal-related materials and electrochemistry, to thus be well positioned for electrochemical synthesis of novel carbon materials. Having a strong background in electrochemistry, molten salt studies, metal alloying and synthesis of carbon materials; experience with a wide variety of experimental methods used for synthesis and study of carbon materials, and strong capabilities with respect to electrochemical characterization, SEM, EDS, Raman spectroscopy and X-ray diffraction, is highly desired.</p> <p>We seek candidates for a postdoctoral fellow position to tackle outstanding challenges in novel carbon materials and other related projects. Carbon synthesis based on electrochemical methods and systems, metal carbides, and related methods and approaches. Candidates should thus have deep experience with: (1) electrochemical synthesis of carbon; (2) study of electrochemical behavior of carbon materials; (3) high temperature electrochemical reactions; (4) study of a broad range of methods of synthesizing carbon materials; (5) understanding and utilization of phase diagram and thermodynamics and (6) various types of spectroscopies and methods to characterize the properties of carbon materials. Ideal candidates will (i) have recently received a Ph.D., (ii) have experience writing manuscripts, (iii) be fluent in English, (iv) exhibit a strong motivation to do basic science research in pioneering areas and to delve deeply into fundamental scientific issues, including as exemplified during his/her Ph.D. studies. The candidate should have a demonstrated history of thinking for themselves, having strong self-initiative, an excellent work ethic, working well at times individually and at times with others, and speak and write English well.</p>
Researcher	[C]	<p>-fiber spinning, carbon fiber, graphitization, carbonization (Team led by Team Leader LEE Sun Hwa/Senior Research Fellow SEONG Won Kyung)</p>	<p>- Degree: Master's degree</p> <p>- Major: Chemical Engineering and/or Materials Science and/or related major</p> <p>- Preference: Master degree-level experience in study of fiber spinning and carbonization, to thus be well positioned for fabrication and characterization of carbon nanofibers. Having a strong background in fiber spinning such as electrospinning and wet spinning, carbonization or graphitization using ultra-high temperature heating regimes, and its mechanical/electrical characterization; experience with a wide variety of experimental methods used for fabrication and study of carbon nanofibers, and strong capabilities with respect to SEM, EDS, Raman spectroscopy and X-ray diffraction, is highly desired.</p> <p>We seek candidates for a researcher position to tackle outstanding challenges in novel carbon materials and other related projects. Preparation of carbon nanofiber and its characterization. Candidates should thus have deep experience with: (1) fiber spinning using electrospinning or wet spinning; (2) operation of high temperature heating regimes; (3) study of carbonization process of polymer; (4) structural analysis of carbon nanofiber; (5) various types of spectroscopies and methods to characterize the properties of carbon nanofiber. Ideal candidates will (i) be fluent in English, (ii) have recently received a Master degree, (iii) have experience writing manuscripts, (iv)</p>

			exhibit a strong motivation to do research in pioneering areas and to delve deeply into fundamental scientific issues, including as exemplified during his/her Master studies, (v) have experience and also a desire to manage related equipment.
Postdoctoral Research Associate	[D]	<ul style="list-style-type: none"> - TEM/STEM analysis -in situ TEM experiments (Characterization group led by Group Leader LEE Zonghoon)	<ul style="list-style-type: none"> - Degree: Doctoral degree (obtained within recent 5 years or to be obtained within 3 months from the appointment start date) - Major: Materials Science, Physics, Chemistry, Chemical Engineering or other related majors - Preference: Experience in TEM/STEM analysis of nanomaterials; aberration-correction; in situ TEM; Simulation is preferred.