

Job Description

Workplace	Center for Multidimensional Carbon Materials (UNIST, Ulsan)	Job category (level)	Postdoctoral Research Associate	Area of hiring	Research ①
Work duties	Research on Theory of Carbon and Related Materials (Theory Group)				
Main business of IBS	<ul style="list-style-type: none"> ○ The Institute for Basic Science (IBS) is a national research institute established in accordance with the Special Act on Establishment of and Support for International Science and Business Belts. The IBS aims to discover creative knowledge and secure original technologies through world-class basic science research. - Basic science research - Fundamental research on interdisciplinary convergence in science and technology - Research on the convergence between basic science and humanities, social sciences, and culture and art - Policy research for setting the direction of basic science research - Programs for establishing and utilizing basic research facilities and equipment - Management, transfer, utilization and commercialization of research outcomes 				
Research area of the Center	○ Design, Synthesis, and Characterization of Novel Carbon Allotropes				
Duties and responsibilities	<ul style="list-style-type: none"> ○ (Research Area) Computational study of graphene and other 2D materials <ol style="list-style-type: none"> 1. Application of machine learning in material science. 2. The structural defects, mechanical, thermal, electronic properties of CNTs, graphene and 2D materials. 3. The computational study of the formation mechanism of CNTs, graphene and other 2D materials. 				
Knowledge required	○ Knowledge of Physics, chemistry, materials science and computational science (doctoral degree)				
Competencies required	○ Research paper and report writing skills, Communication and presentation skills, Problem solving ability, Fluency in English				
Attitude required	<ul style="list-style-type: none"> ○ Communication through cooperation, Adaptability to the organizational culture ○ Creative work attitude for research in various fields of the required area 				
Basic skills required	○ Communication, Problem solving, Interpersonal relationship, Information processing, Proficiency in English language, Development potential, Work ethics, etc.				

<p>Qualification</p>	<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, or other related majors ○ Preference: Applicants with experience in parallel coding, machine learning applications, GPU programming, machine learning force field development are highly preferred. <p>We seek candidates for Postdoctoral Research Associate ¹⁾ position with specialties in materials science, physics, chemistry, or other related fields. The candidate needs to be fluent in both oral and written English and will work on projects aimed at detailed study of novel carbon and related materials. Familiarity with the basic aspects of carbon materials is valued. It is highly desirable that the candidate has working experience with (i) handling at least one programming language such as C, Fortran, python and so on in Linux environment, and familiarity with high performance computer (HPC) systems (ii) studies of various phenomena at the surface or, of physical properties of various carbons forms and other related materials with computational methods such as Monte Carlo (MC), molecular dynamics (MD), ab-initio methods and so on (iii) applying machine learning (ML) methods to material science.</p>
<p>Screening</p>	<ul style="list-style-type: none"> ○ Stage 1: Document Screening → Stage 2: Interview Screening

- ▶ This job description states major work duties of the hiring area. Work duties that are not stated here may need to be performed.
- ▶ The employment term for the position ① is for **6 months, or up to, but not more than, 12 months.**

Job Description

Workplace	Center for Multidimensional Carbon Materials (UNIST, Ulsan)	Job category (level)	Postdoctoral Research Associate	Area of hiring	Research ②
Work duties	Research on Theory of Carbon and Related Materials (Theory Group)				
Main business of IBS	<p>○ The Institute for Basic Science (IBS) is a national research institute established in accordance with the Special Act on Establishment of and Support for International Science and Business Belts. The IBS aims to discover creative knowledge and secure original technologies through world-class basic science research.</p> <ul style="list-style-type: none"> - Basic science research - Fundamental research on interdisciplinary convergence in science and technology - Research on the convergence between basic science and humanities, social sciences, and culture and art - Policy research for setting the direction of basic science research - Programs for establishing and utilizing basic research facilities and equipment - Management, transfer, utilization and commercialization of research outcomes 				
Research area of the Center	○ Design, Synthesis, and Characterization of Novel Carbon Allotropes				
Duties and responsibilities	<p>○ (Research Area) Synthesis and characterization of 2D materials</p> <ol style="list-style-type: none"> 1. Chemical vapor deposition (CVD) synthesis of various 2D materials 2. Characterizations (Raman, AFM, SEM, XPS, ENSD,...) of the synthesized 2D materials 3. Data analysis and organization 				
Knowledge required	○ Knowledge of physics, chemistry, materials science (doctoral degree)				
Competencies required	○ Research paper and report writing skills, Communication and presentation skills, Problem solving ability, Fluency in English				
Attitude required	<p>○ Communication through cooperation, Adaptability to the organizational culture</p> <p>○ Creative work attitude for research in various fields of the required area</p>				
Basic skills required	○ Communication, Problem solving, Interpersonal relationship, Information processing, Proficiency in English language, Development potential, Work ethics, etc.				

<p>Qualification</p>	<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, or other related majors ○ Preference: Experiences with 2D materials synthesis, characterization is essential. Knowledge of metallurgy, twin boundaries, materials growth mechanisms and the experience of metal annealing is highly desired. <p>We seek candidates for Postdoctoral Research Associate ¹⁾ position with specialties in materials science, physics, chemistry, or other related fields. The candidate needs to be fluent in both oral and written English and will work on projects aimed at detailed study of novel carbon and related materials. Familiarity with the basic aspects of carbon materials is valued. It is highly desirable that the candidate has working experience with (i) CVD materials synthesis, (ii) characterization of carbon materials with Raman, XPS, SEM, AFM... and excellent publication recorded in related research fields.</p>
<p>Screening</p>	<ul style="list-style-type: none"> ○ Stage 1: Document Screening → Stage 2: Interview Screening

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- ▶ The employment term for the position ② is for **6 months, or up to, but not more than, 12 months.**

Job Description

Workplace	Center for Multidimensional Carbon Materials (UNIST, Ulsan)	Job category (level)	Postdoctoral Research Associate	Area of hiring	Research ③
Work duties	Research on Electron/Spin Manipulation at Novel Functional Carbon and Related Materials (YSF Team)				
Main business of IBS	<p>○ The Institute for Basic Science (IBS) is a national research institute established in accordance with the Special Act on Establishment of and Support for International Science and Business Belts. The IBS aims to discover creative knowledge and secure original technologies through world-class basic science research.</p> <ul style="list-style-type: none"> - Basic science research - Fundamental research on interdisciplinary convergence in science and technology - Research on the convergence between basic science and humanities, social sciences, and culture and art - Policy research for setting the direction of basic science research - Programs for establishing and utilizing basic research facilities and equipment - Management, transfer, utilization and commercialization of research outcomes 				
Research area of the Center	○ Design, Synthesis, and Characterization of Novel Carbon Allotropes				
Duties and responsibilities	○ (Research Area) Electronic transport study of graphene and other 2D materials				
Knowledge required	<p>○ Condensed matter physics</p> <p>○ Knowledge of magnetic materials properties and analysis methods</p> <p>○ Experience of unit device fabrication process such as e-beam lithography, reactive ion etching, annealing, metal deposition.</p> <p>○ Experience of material thin film deposition with vacuum conditions</p>				
Competencies required	○ Research paper and report writing skills, Communication and presentation skills, Problem solving ability, Fluency in English				
Attitude required	<p>○ Communication through cooperation, Adaptability to the organizational culture</p> <p>○ Creative work attitude for research in various fields of the required area</p>				
Basic skills required	○ Communication, Problem solving, Interpersonal relationship, Information processing, Proficiency in English language, Development potential, Work ethics, etc.				

Qualification	<ul style="list-style-type: none"> ○ Degree: Doctoral degree ○ Major: Physics, Materials science and related majors ○ Preference: Applicants with experience in low temperature electron transport study, and spintronic are preferred <p>We seek candidates for Postdoctoral Research Associate ¹⁾ position with specialties in physics, materials science, or other related fields. The candidate needs to be fluent in both oral and written English, and will work on projects aimed at detailed study of novel carbon and related materials.</p> <p>Familiarity with the basic knowledge of device fabrication processing is valued. It is highly desirable that the candidate has working experience with (i) studies of various electronic transport phenomena at the carbon and oxide unit devices (ii) electronic transport study within specific conditions such as low temperature high magnetic field and (iii) Magneto-Optical Kerr Effect (MOKE) spectroscopy including equipment set up and analysis.</p>
	<ul style="list-style-type: none"> ○ Stage 1: Document Screening → Stage 2: Interview Screening

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