



Center	Interdisciplinary Research Center for Intelligent Manufacturing and Robotics (IRC-IMR)
Job Title	Post-Doctoral Fellow
(Mechanical Design / Precision Design of Advanced Engineering Systems)	<p>The selected candidates will contribute to the design and development of advanced mechanical systems and engineered platforms supporting strategic, application-driven research initiatives. The role emphasizes the development of functional, scalable, and high-performance systems, integrating principles of mechanism synthesis, kinematic analysis, structural design, precision engineering, and system integration.</p> <p>The position requires a strong focus on engineering design from concept to realization, including CAD/CAE-driven modeling, simulation, optimization, and prototyping, with consideration of manufacturability, reliability, and performance under operational conditions. Candidates are expected to contribute to the development of complex, multidisciplinary systems, often involving the integration of mechanical components with actuation, sensing, and control elements.</p>
Job Responsibility	<ul style="list-style-type: none"> • Design and develop innovative mechanical systems and engineered machines from concept through realization • Perform kinematic, multibody, and structural analyses using advanced CAD/CAE tools • Translate research concepts into robust engineering designs, detailed models, and functional prototypes • Lead and support prototype development, experimental testing, and validation aligned with TRL progression • Apply Design for X (DfX) principles, including manufacturability, assembly, reliability, and scalability • Integrate mechanical subsystems with actuation, sensing, and control architectures • Collaborate within multidisciplinary teams spanning manufacturing, materials, robotics, and digital engineering • Publish research outcomes in high-impact journals and international conferences • Contribute to the development of research proposals, technical reports, and funded projects • Mentor graduate students and contribute to capacity building within the research team
Qualification	<p>PhD in Mechanical Engineering or a closely related field</p> <ul style="list-style-type: none"> • Strong background in: <ul style="list-style-type: none"> ○ Mechanical and Machine Design ○ Precision engineering and tolerance design ○ Mechanism design and kinematics ○ Modeling and simulation of mechanical systems • Proficiency in CAD/CAE tools (e.g., SolidWorks, CATIA, ANSYS, Abaqus, MSC Adams or equivalent) • Programming skills (e.g., MATLAB, Python, or similar) are desirable • Demonstrated research capability through publications or thesis work • Strong analytical, problem-solving, and communication skills • Ability to work independently and in a multidisciplinary research environment • Ability and willingness to learn new application domains and contribute to diverse engineering systems <p>Preferred (but not mandatory):</p> <ul style="list-style-type: none"> • Experience in prototype development and experimental validation • Knowledge of design optimization and system integration • Familiarity with advanced manufacturing processes • Exposure to digital twin, automation, or AI-assisted design



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Job Title	Post-Doctoral Fellow
(Ultrafast Laser Processing / Micro-Manufacturing / Functional Surfaces)	<p>The selected candidate will contribute to the development of ultrafast laser-based manufacturing capabilities at IRC-IMR, with a focus on precision surface engineering, micro/nano-structuring, and functional material processing.</p> <p>The position supports the Center’s strategic direction in Devices and Micro-Manufacturing, where laser-based techniques are used to create engineered surfaces and microstructures with tailored properties for advanced applications. The work involves complex laser–material interactions, where process behavior is highly sensitive to laser parameters and material response, requiring systematic investigation and optimization.</p> <p>The role combines experimental process development, multi-physics understanding, and performance validation, with emphasis on repeatability, scalability, and application relevance. Candidates are expected to contribute to the development of robust processing methodologies and validated solutions that can transition from laboratory-scale studies toward practical implementation, while advancing data-driven research beyond standard optimization.</p>
Job Responsibility	<ul style="list-style-type: none"> • Develop and optimize ultrafast (femtosecond) laser processes for surface engineering and microfabrication • Investigate laser–material interaction mechanisms and their impact on surface morphology and functional performance to identify new process–structure–property relationships • Design and conduct systematic experiments to establish process–structure–property relationships • Perform predictive multi-physics modeling and simulation to support process understanding and optimization • Characterize processed materials using advanced techniques (SEM, EDS, XRD, AFM, etc.) • Establish process maps and parameter windows for stable, repeatable, and scalable operation • Operate and maintain femtosecond laser systems and associated optical setups • Integrate laser processes with sensing, monitoring, and data acquisition systems for data-driven optimization • Contribute to the development of application-driven solutions in micro-devices and functional surfaces • Publish high-novelty research outcomes in high-impact journals and conferences • Support research proposals, reporting, and funded projects • Mentor graduate students and contribute to research activities
Qualification	<ul style="list-style-type: none"> • PhD in Materials Science, Mechanical Engineering, Physics, Nanotechnology, or a closely related field • Strong background in one or more of the following: <ul style="list-style-type: none"> ○ Ultrafast laser materials processing (femtosecond lasers preferred) ○ Surface engineering and micro/nano-fabrication ○ Laser–material interaction and process physics ○ Thermal/multi-physics modeling of manufacturing processes • Demonstrated hands-on experience in: <ul style="list-style-type: none"> ○ Laser processing and parameter optimization ○ Experimental design and data analysis ○ Materials characterization (SEM, AFM, XRD, etc.) • Proficiency in simulation tools (e.g., COMSOL, ANSYS, Abaqus) is desirable • Programming skills (MATLAB, Python, or similar) are an advantage for data analysis, image analysis, or data-driven process optimization



	<ul style="list-style-type: none">• Strong publication record demonstrating research capability and independence• Ability to work independently and within multidisciplinary teams <p>Preferred (not mandatory):</p> <ul style="list-style-type: none">• Background in sensor fabrication or functional surface design• Familiarity with micromachining software and laser system integration• Exposure to data-driven process optimization or digital twin concepts• Experience with in-situ diagnostics, real-time monitoring, or closed-loop control of laser processes.• Experience with graphene or functional nanomaterials
How to Apply	<p>The position is now open, and applications will be reviewed on a rolling basis until the position is filled. To apply:</p> <ol style="list-style-type: none">1. Please complete the application form Link and2. Send your full application package to: Director, IRC for Intelligent Manufacturing and Robotics Email: irc-imr@kfupm.edu.sa <p>The application package must include:</p> <ol style="list-style-type: none">a) Cover letterb) Detailed academic CV, including at least three references.c) One-page research statement demonstrating the candidate's fit with the advertised research areas and outlining future research plans <p>King Fahd University of Petroleum and Minerals (KFUPM) is located in the Eastern Province of Saudi Arabia and is ranked 67th globally in the QS World University Rankings 2026. KFUPM Official Website</p> <p><i>We thank all applicants for their interest; however, only shortlisted candidates will be contacted for an interview.</i></p>