Opening for PhD student position – numerical and experimental investigations of structures with embedded FBG sensors

In the frame of M-ERA.NET Call 2019 project entitled: "Additive manufactured composite smart structures with embedded fibre Bragg grating sensors"
funded by the National Science Centre, Poland

Institute of Fluid-Flow Machinery, Polish Academy of Sciences, Gdańsk, Poland

About the project

We are looking for a talented person holding MSc title, who is interested in continuing her/ his scientific work and writing a doctoral dissertation. The project provides employment for one scholarship holder. The research will be realised at the Department of Mechanics of Intelligent Structures (http://www.imp.gda.pl/en/o4/z1/).

The aim of research will be development of high performance composites – additive manufactured (AM) carbon/ glass fibre reinforced polymers (CFRP/ GFRP) with embedded fibre Bragg grating (FBG) sensors. The main objective of the project is development of AM method for embedding FBG sensors into composite materials during manufacturing process. To analyse the durability of AM elements and influences of embedded FBG sensors, mechanical and environmental tests will be performed. Additionally, composite samples structures after manufacturing as well as application of mechanical and environmental loading will be analysed using non-destructive testing (NDT) (infrared thermography (IRT), THz spectroscopy) and microscopic techniques. These methods will allow to analyse embedded FBG sensors influence on AM composite material. Additionally, behaviour of composite materials under mechanical or environmental loading will be modelled using the finite element method (FEM). It will allow to achieve a more complex picture of embedded fibre optic influences on AM composite material durability.

Project will be realised under international collaboration with Kaunas University of Technology (Lithuania) and Institute of Fundamental Technological Research of the Polish Academy of Sciences (Poland).

The offer

We offer a PhD position:

- in the Department of Mechanics of Intelligent Structures, IMP PAN Gdańsk, Poland (http://www.imp.gda.pl/en/o4/z1/).
- position funded with a PhD scholarship is offered for 36 months
- the monthly amount of the PhD scholarship is 4400 zł/month

Eligibility criteria/ Skills/Qualifications

1. Masters in mechanical engineering, material science, physics or related fields.
2. High average grade obtained during studies.
3. Good knowledge of written and spoken English.
4. High motivation for scientific work and a strong commitment to research work.

Tasks

1. Numerical and experimental investigations related to analyses of environmental factors and mechanical loading influences on additive manufactured structures with embedded FBG sensors.
2. Analyses of the internal structure of additive manufacturing composite materials
3. Development of codes in Matlab.
4. Signal processing and results analysis.
5. Preparation of reports based on results analysis.
6. Preparation of journal and conference publications.
7. Presentation of results at scientific conferences related to research topics.
8. Communication and discussion of results within the research team.

Specific Requirements

We especially seek candidates who:

- possess knowledge about numerical methods (mostly finite element method) and modelling,
- have experience with Matlab environment, ability to write codes in Matlab language.
- possess knowledge about mechanical tests
- mobility and flexibility for conference travels.

In addition, the following will be assessed:

- the candidates' scientific track record (publications, conferences, projects, scholarships, etc.),
- the prizes and distinctions of the candidate resulting from the research carried out.

Selection procedure

Selection process is in accordance to National Science Centre regulations.

1. Submission of applications is possible until **July 20, 2020, 10:00 AM**
2. Form of applications: Applications in English can be sent by e-mail to **job@imp.gda.pl** with a subject "PhD student in M-ERA.NET application - numerical and experimental investigations of structures with embedded FBG sensors ".
3. Candidates interested in applying for the position should submit the following documents:
   - cover letter
   - CV / scientific resume
   - copy of the certificate of Master degree
   - the list of scientific achievements (publications, participation in research projects, participation in conferences, awards, scientific stays, etc.)
   - optional: letter(s) of recommendation obtained from people (e.g. supervisors, former managers) directly cooperating with the candidate.
4. The application must contain information about the educational background and work experience.
5. Please, attach the requested documents in the PDF format.
6. The result of the recruitment procedure will be sent to the candidates via email.
7. Please include in the application the following statement:

   "I hereby authorize to process my personal data included in my application for the needs of the recruitment process (in accordance with the Act of 08.20.1997 r. on personal data protection - Dz. U. No 133, item 883) ".

If necessary, selected candidates may be invited for an interview (in person or via online videoconference).

Additional questions could be sent by email to Magdalena Mieloszyk: mmieloszyk@imp.gda.pl