DEPARTMENTOF MECHANICAL AND
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Ph.D. Studies at the Holistic Structural Integrity Process Laboratory
Clarkson University, Potsdam, NY, USA

The Holistic Structural Integrity Process (HolSIP) Laboratory at Clarkson University, has two positions open for graduate students interested in the field of structural integrity modelling and simulations. Clarkson University is located in Potsdam NY, USA. It is a small rural community serving as a gate to the beautiful Adirondack park.

The HolSIP lab is looking for two candidates to work under the supervision of Prof. Marcias Martinez and Prof. Craig Merrett. The required qualifications for these positions are:

1. Acquired M.Sc. in Mechanical and/or Aerospace/Aeronautical Engineering (preferred). Recent graduates with a Bachelor degree will also be considered.
2. Experience in Experimental Mechanics and/or Finite Element Modeling (ABAQUS CAE).
3. Strong background in mathematical and computational analysis.
4. Proficient in technical writing.

Position 1: Prof. Martinez and Prof. Merrett are collaborating with an industry partner in the modelling and simulation of glass bead manufacturing. This technical challenge will require a strong candidate to look at the physics of glass fracture through Finite Element Analysis and statistical methods. In addition, the student will be working in collaboration with the industry partner in the Potsdam plant. As such we are seeking for a graduate student that is not afraid of performing experimental studies in a manufacturing operational environment.

Position 2: The widespread use of adhesive joints has been hampered by the inability of the aeronautical community to determine the life and predict the static strength of these joints. As such, Prof. Martinez and Prof. Merrett are collaborating in developing analytical, computational and Structural Health Monitoring techniques for static strength prediction of adhesively bonded joints. The student will combine, analytical models (Matlab), with computational models (ABAQUS) and Structural Health Monitoring/NDI/Experimental Techniques (Acoustic Emissions, Phase Array, Distributed Sensing Fiber Optics, Digital Image Correlations), to assist in developing a predictive physics-based model.

Information on our Lab capabilities can be found at: www.marciasmartinez.com

Interested candidates should send their CV and cover letter to the attention of Prof. Marcias Martinez and Prof. Craig Merrett. Email: mmartine@clarkson.edu

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Prof. Marcias Martinez, Ph.D.: Is an Associate Professor in the Department of Mechanical and Aeronautical Engineering [https://www.clarkson.edu/people/marcias-martinez]. Prof. Martinez, has worked on many industry and federally funded projects (SBIRs) in the field of experimental mechanics, modeling and simulation and Non-Destructive Inspection/SHM research projects. While working at Delft University of Technologies, in the Netherlands, Prof. Martinez became a Marie Curie Fellow and was awarded a Marie Curie Grant, titled: MASS – Monitoring of Aerospace Structural Shapes (Grant No. 618316) from the European Union. Currently, he supports a research group in the Netherlands of 4 Ph.D. students (TUDelft) and 1 Ph.D. and 1 M.Sc. student at Clarkson University, all working in the fields of SHM, Load Monitoring, Fatigue, Experimental Mechanics and Damage Tolerance of aeronautical structures.

Prof. Craig Merrett Ph.D. P.Eng.: Is an Assistant professor of mechanical and aeronautical engineering at Clarkson University [https://www.clarkson.edu/people/craig-merrett]. Dr. Merrett's work on viscoelasticity, viscoelastic stability and composite aircraft structures involved the development of a new model for estimating the time to instability for composite aircraft wings in flutter and nuclear reactor rings in buckling. The model provided the foundation for a more general model predicting the time to instability for any viscoelastic structure. The more general model is currently applied to a variety of aircraft wings with known instability characteristics (flutter) with good agreement.