CONFERENCE SCHEDULE

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27-28 July 2017

Conference Venue

Facultat de Filiosofia, Facultad de Geografia e Historia, (Department of Philosophy, and Department of Geography and History) Universitat de Barcelona, Barcelona, Spain

(Rooms 401 & 402, Fourth Floor)

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	Keywords: Skin friction, Biotribology, Lower limb, Viscoelastic materials.
Yamina Chergui **GICICRST1708164**	**Biosorption of ETL dye from aqueous solution by low cost sorbent** **Yamina Chergui** **Laboratory of recovery materials. Faculty of Science and Technology** **University of Mostaganem Bp 27, Mostaganem Algeria.** **A. Iddou** **Laboratory of recovery materials. Faculty of Science and Technology** **University of Mostaganem Bp 27, Mostaganem Algeria.** **ABSTRACT:** **This present study is investigates to the batch ETL dye sorption by Grap seeds. The sorbent was synthesized and characterized by scanning electron microscope (SEM) and Fourier transform infrared spectroscopy (FTIR). The effects of pH, initial dye concentration, contact time and mass sorbent in the efficiency of ETL sorption were investigated. Furthermore, pseudo-first and second-order kinetic models were also used to analyze sorption kinetics. The equilibrium adsorption results were fitted by the Langmuir and Freundlich isotherms. Maximum amount ETL removal 95.36 mg/g was observed at pH 2, sorbent weight 500mg and contact time 60 min. The Langmuir model feted well the experiments data.** **Key words: waste water, biosorbant, isotherms, modeling ….**
 **Elza M M Fonseca** **ICICRST1708055**	**Dynamic numerical simulation of different drill bit diameter on the polyurethane foams drilling** **Maria G Fernandes** **PhD Student, INEGI, Faculty of Engineering, University of Porto, Porto, Portuga** **Elza M M Fonseca** **LAETA, INEGI, Polytechnic Institute of Bragança, Portugal** **Tiago A S Teixeira** **MSc Student, Polytechnic Institute of Bragança, Bragança, Portugal** **Renato N Jorge** **INEGI, Faculty of Engineering, University of Porto, Porto, Portugal** **Abstract** **Drilling is one of the most common processes involved in different cutting operations and may affect the mechanical properties of the workpiece by creating residual stresses around the opened hole and highly stressed on the newly formed surface. Nevertheless, when it comes to the living tissues, drilling assumes more**

	attention to guarantee a non-invasive procedure. Drilling of bone is common in orthopaedic surgical process, to produce a hole to screw insertion to fix the fractured members for immobilization, or even in dental implant interventions. This work describes a conventional drilling process performed on solid rigid polyurethane foams blocks with similar mechanical properties to the human bone. A dynamic and numerical study was conducted to evaluate the use of different drill diameters (4, 5 and 6mm) on the stresses generated during the drilling process. Different numerical simulations using the LS-DYNA program were performed to assess the level of stresses and the damage effect on the foam structure. This program is based on the explicit dynamic finite element method and incorporates the dynamic characteristics involved in the drilling process. Different drill bit geometries and foam blocks were developed through the SolidWorks program and imported into LS-DYNA program for the numerical simulation. The main objective of this study is to verify the combination between some drill parameters that reduce the mechanical damage during bone drilling procedures. The obtained results permit to assess the influence of the drill bit diameter, concerning on strains and stresses evolution, using a constant feed-rate (75mm/min) and drill speed (600rpm). For these conditions, numerical results show that the smaller drill bit diameter leads to a decrease in the stresses generation in solid rigid foam materials during the drilling process. **Keywords: polyurethane foam, drilling process, drill diameter, stress level.**
Paulo Alexandre Gonçalves Piloto **GICICRST1708056**	**Fire performance of non-loadbearing light steel framing walls – numerical and simple calculation methods** **Prof. Paulo A. G. Piloto** **LAETA-INEGI, Department of Applied Mechanics, Polytechnic Institute of Bragança (IPB), Bragança, Portugal** **MSc. Mohamed S. Khetata** **Science and Technology Park – Brigantia-EcoPark, Bragança, Portugal** **Prof. Ana B. R. Gavilán** **Department of Mechanical Engineering, University of Salamanca (USAL), Zamora, Spain** **Abstract** **Light steel frame and prefabricated panels are widely used in non-loadbearing walls, with direct application to steel framed buildings. Such panels consist of channel steel sections (studs and tracks) with gypsum plasterboard layers attached to the flanges on the outside and use insulation material in the cavities. The fire resistance is usually provided by one or more layers of panels and also by the insulation material. This investigation evaluates the thermal behaviour of the unexposed surface and also of the internal layers, using numerical simulations and a simple calculation method, assuming that heat flux is almost one-dimensional. The fire resistance is compared for both models using a two dimensional cross**

	Membrane_based processes are very susceptible to flux decline due to fouling problems and the concept of fouling control via process optimization, thus cleaning have been the focus of research in water **Conventional methods for removing membrane fouling include both chemical and physical cleaning. However, the secondary treatment costs incur due to the use of chemicals required for cleaning, which is one of the reasons for the increased operating costs.** **The aim of this study is to reduce the total usage of chemicals through steam cleaning technology.** **Lab-scale experiments were adapted to compare cleaning strategies. Membrane filtration was performed with constant flow rate of about 80 L/m2h with the change of TMP being monitored.** **Tensile strength analysis, surface analysis by SEM, and pore size distribution analysis using CFP were done. To prevent deterioration during the membrane steam cleaning operation, the application of the steam technology in the membrane process was performed for approximately 3 minutes.** **after 3 filtration cycles, with each cycle lasting for 30 minutes, backwashing, after backwashing and steam washing, was compared through TMP.** **The findings from this work suggest that the use of steam cleaning process is more effective in membrane cleaning compared to the conventional backwashing method.** **Key words : Membrane cleaning , Membrane fouling, Filtration resistance, Steam Cleaning , Microfiltration**

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