



# CERTIFICATE OF PARTICIPATION

This is to certify that

**KHALFALLAH Fares**

Participated in the “**THE 1<sup>ST</sup> INTERNATIONAL CONFERENCE ON RENEWABLE MATERIALS AND ENERGIES ICRME2022**  
**October 26-27, 2022, OUARGLA-ALGERIA**” with **POSTER** presentation entitled:

**NUMERICAL STUDY OF HEAT TRANSFER BY MIXED CONVECTION IN A VENTILATED CAVITY FILLED WITH  
HYBRID NANO-FLUID**

Co-authors : BENDERRADJI Razik, BRAHIMI Meryem, AOUACHE Elhadj



Président de ICRME 2022

Dr. BENKRIMA Yamina



# BOOK OF ABSTRACTS

**1<sup>st</sup> International Conference on Renewable  
Materials and Energies ICRME2022**

October 26-27, 2022, OUARGLA-ALGERIA

<https://icrme2022.sciencesconf.org/>

# ICRME 2022 SCHEDULE

**DAY ONE 26 OCTOBER**

**08:00 - 8:20**  
OPENING CEREMONY

**08:20 - 8:50**  
PLENARY CONFERENCE

<https://youtu.be/-kjlWdA5N4A>



**09:00 - 12:00**  
ORAL & POSTER SESSIONS

**13:00 - 17:00**  
ORAL & POSTER SESSIONS

**DAY TWO 27 OCTOBER**

**09:00 - 12:00**  
ORAL & POSTER SESSIONS

**14:00 - 15:00**  
CLOSING CEREMONY

<https://youtu.be/zlbK5ciCIRw>





# ROOM POSTER P.12

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Link of the ROOM P.12:

 <https://meet.google.com/juo-gypm-fkm>

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## ROOM POSTER P.12

CODE	Author email	Title of communication <i>Co-authors</i>
P166	<b>GUIA Djamel Eddine</b> guia-djameledine@univ-eloued.dz	<b>Ca<sub>1-x</sub>La<sub>x</sub>FeO<sub>3</sub> (0.3≤x≤0.6), a potential material for cathode applications in SOFC.</b> <i>MAHBOUB Mohammed Sadok , BEN ALI Ouarda , ZEROUAL Soria, RIHIA Ghani, BOULAHBEL Hani , MIMOUNI Mourad, GHOUGALI Mebrouk, BEGGAS</i>
P167	<b>MIHI Sana</b> sm2210730@gmail.com	<b>An application MATLAB for Standard and modified Judd-Ofelt theories analysis from Pr<sup>3+</sup> absorption and emission spectra</b> <i>SOLTANI Mohamed Toufik, WONDRACZEK Lothar</i>
P168	<b>LAIB Abdellatif</b> abdellatif-laib@univ-eloued.dz	<b>Optical and electrical conductivity of Li:NiO films deposited by spray pyrolysis.</b> <i>BENHAOUA Atman, BELLILA Abdelkader</i>
P169	<b>ADDA BENATTIA Tekkouk</b> tekkouk.addabenattia@univ-mosta.dz	<b>Dimensioning and realization of an LTCC multilayer capacitor for energy conversion</b> <i>MELATI Rabia , BENZIDANE MOHAMMED Ridha</i>
P170	<b>ABBES EI Habib</b> habib.abbes.etu@univ-mosta.dz	<b>Ab-initio study for the elastic stability, structural and electronic properties of Rh<sub>2</sub>CuGe full Heusler alloy.</b> <i>ABBASSA Hamza, BOUHAMOU Imen</i>
P171	<b>GARADI Fatima</b> f.garadi@lagh-univ.dz	<b>Ab-initio study of Skutterudite compounds, for thermoelectric application</b> <i>HALIT Mohemed, HANIFI Mebarki</i>
P172	<b>BOUALLAG Sihem</b> S.bouallegue@univ-boumerdes.dz	<b>One-step Electrosynthesis of Cuprous Oxide-Sodium Dodecyl Sulfate Cu<sub>2</sub>O-SDS as Electrode Materials for Super- Capacitors application</b> <i>ZABAT Mokhtar, MOUGARI Ahmed, BELYADI Adel</i>
P173	<b>BANZAIDI Ikram</b> ikrambenzaidi8@gmail.com	<b>Study of the electronic, mechanical stability of compounds based on alkali and alkaline-earth metals</b>

P174	<b>GOUDJIL Sarra</b> sarragoudjil46@gmail.com	<b>Production of carbon nanofiber on supported metal catalysts</b> <i>BENAMAR Aicha, AZAZ Mohamed, GOUDJIL Sabrina</i>
P175	<b>DJEMOUI Kheira</b> djemouikheira33@email.com	<b>A theoretical study to feed the requirements of a farm and a house in an isolated area by PV solar panels in the region of Ouargla</b> <i>SOUDANI Mouhamed El bar</i>
P176	<b>KHALFALLAH Fares</b> fares.khalfallah@univ-msila.dz	<b>Numerical study of heat transfer by mixed convection in a ventilated cavity filled with hybrid nano-fluid</b> <i>BENDERRADJI Razik, BRAHIMI Meryem, AOUACHE Elhadj</i>
P177	<b>DEHBI Atallah</b> dehbi.atallah@yahoo.com	<b>Computational Materials Science In Catalysts And Applications</b> <i>BENCHKH Imene</i>
P178	<b>MEFOUED Amine</b> amefoued@hotmail.com	<b>Morphology, spectroscopy and photoluminescence properties of neodymium-coated silicon nanostructures</b> <i>MAHMOUDI Bedra , BENREKAA Nasser, MENARI Hamid, MEZGHICHE Saleh, MANSERI Amar, BRIK Afaf, TIOUR Faiza, Moustafa DEBBAB</i>
P179	<b>KEZIZ Ahcen</b> ahcen.keziz@univ-msila.dz	<b>Characterization of cordierite/mullite composites prepared by sol-gel technique</b> <i>HERAIZ Meand, SAHNOUNE Foduil</i>
P180	<b>BOURICHE Sabrina</b> sabrinabouriche740@gmail.com	<b>Synthesis of graphene from graphite rods recycled from electrical storage devices -Microwave treatment effect</b> <i>MAKHLOUF Mourad, KADARI Mohamed, BENMAAMAR Zoubir</i>
P213	<b>GOUASMIA Takrim</b> gouasmia.takrim@gmail.com	<b>Structural and Microstructural Study of Binary Iron Based Alloy Prepared via Mechanical Alloying</b> <i>BELAKROUM Karima, LOUDJANI Nadia</i>
P241	<b>BENABIDI Bilal</b> <a href="mailto:benabidi.bilal@univ-ouargla.dz">benabidi.bilal@univ-ouargla.dz</a>	<b>Production of environmentally safe softeners of rubbers and gums</b> <i>GAYLE Alexander , KUZICHKIN Nikolai</i>
P242	<b>DERABLA Riad</b> <a href="mailto:rderabla@gmail.com">rderabla@gmail.com</a>	<b>Formulation of a Self-compacting Eco-Concrete based on Recycled Tile Waste Aggregates</b> <i>MEDAOUED Nadjwa</i>

Book of abstracts  
ICRME2022 Ouargla ALGERIA

Poster communications



# Numerical study of heat transfer by mixed convection in a ventilated cavity filled with hybrid nano-fluid

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**Abstract:** In this work, we carried out a numerical study of the stationary laminar flow by mixed convection in a ventilated two-dimensional cavity containing a cold cylinder in the center of the latter. The cavity is filled with different hybrid nano-fluids, (Water/Ag-TiO<sub>2</sub>) and (Water/Al<sub>2</sub>O<sub>3</sub>-TiO<sub>2</sub>). The cavity containing two gates (Orifices) of entry and exit of the flow, for a Reynolds number (Re) fixed so that the Richardson number takes the values:  $Ri = 0.1, 1, 10$  and  $100$ , and a volume fraction of the nanoparticles comprised between (0% and 8%). The square cavity is heated isothermally by the surface of the lower wall by a heat source (The source is to maintain the lower wall at constant temperature), the other walls are maintained adiabatic. The equations, which govern the flow, have been solved numerically using the finite volume method. The results obtained show that the heat transfer increases with the increase in the volume fraction and the Richardson number. Thus the heat transfer rate (Nu) increases with the increase in Ri.

## Computational Materials Science In Catalysts And Applications

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**Abstract:** This work focuses on a computational study on the mechanisms of oxidation of alcohols by hydrogen peroxide with the use of Fe-ZSM-5 as a catalyst. These molecular modeling methods allow us to visualize physics at work. The phenomenon of oxidation of the substrate by the MFI type zeolites (M-ZSM-5) takes place at the nanoscale, it is impossible for the chemists to observe the steps of the phenomenon. Numerical Simulations thus offers a better understanding of the catalytic phenomenon (adsorption, oxidation, desorption ...). In addition, DFT methods prove their effectiveness in the determination of molecular structures (intermediates and transitions), the frequencies of the modes of vibration and the variation of energy. They offer a very effective theoretical tool for practical applications to compare and supplement experimental studies. The studies that we conducted by the Gaussian 09 logistic on clusters of Fe-ZSM-5-substrates showed this well.

