



## Scientific Tracks & Abstracts



## 4<sup>th</sup> International Webinar on Materials Chemistry

October 21, 2021 | Webinar

### Generation of Electricity using Eco-economical Non-Conventional techniques

**Seema Vats**

University of Delhi, India

In this project the kinetic energy of moving vehicle is converted into the electrical energy. This is called as road based energy harvesting technique for electricity generation. It is an advance innovative energy solution to meet the growing demand of electricity through a roller embedded in speed breaker. System consisting of roller embedded in speed breaker is intended for use on stretches of road where vehicles slow down such as Entry/Exit Gates, off and Down Ramps in Malls and Variety of Checkpoints and Tollbooths on Highways. This system helps in charging of the battery operated vehicle at toll booth, street lights, charging up mobile phones etc at Low maintenance and Low installation cost. Energy generated on site with wooden roller embedded in speed breaker generates voltage up to 12Volt (it could lit up 60 LED's) and it is also integrated with piezoelectric tiles.

#### Biography

Seema Vats is an Associate Professor in Department of Physics, University of Delhi. She has done various innovation projects on electricity generation from non-conventional methods and environmental impact of mining etc. She has won first prize in poster presentation in an international conference on innovation held at Amity University and certificate of Appreciation in innovation project funded by University of Delhi. She has presented and published papers in various international and national conferences and journals. She has been associated with various organizations as a resource person like NCERT, NIOS and IAPT.

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### **Quantum mechanics, Molecular modeling by MD simulation, Characterization (SEM/EDS/UV-Visible), Thermodynamic and Electrochemical studies of the inhibitory power of two quinoline derivatives for C38 in aggressive electrolyte**

**Hicham Fakhry**

Ibn Tofail University, Morocco

The present paper aims to validate the power inhibition of the two new organic compounds of the Quinoline family [DEMQ] and [HBMQ] against the dissolution of C38 steel in Hydrochloric Acid (HCl) electrolyte. Gravimetric, ac impedance, potentiodynamic polarization measurements (PDP) and surface morphology analyze by scanning electron microscopy with energy dispersive spectroscopy (SEM/EDS) were coupled to establish inhibition performance. Then, quantum mechanics methods like Discrete Fourier Transform (DFT) and Molecular Dynamic Simulation (MD) were used to demonstrate the adsorption process of inhibitory molecules. Based on EIS results, the investigated derivatives effectively inhibit the degradation of C38 steel over the entire concentration range with a maximum efficiency of 97.9 % and 95.8 % for [DEMQ] and [HBMQ], respectively at 10-3 M. In addition, the potentiodynamic polarization (PDP) studies revealed that [DEMQ] and [CBMQ] compounds acted according to a mixed-type mechanism. Moreover, the adsorption mechanism follows the Langmuir isotherm model. The quantum theoretical study confirmed the experimental results.

#### **Biography**

Hicham Fakhry is a PhD candidate at Ibn Tofail University in Laboratory of Separation Processes, and Laboratory of Materials, Nanotechnology and Environment, Faculty of Sciences, Mohammed V University (Rabat Agdal).

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