

3<sup>rd</sup> Online International Webinar on

# **RENEWABLE ENERGY AND SUSTAINABLE TECHNOLOGIES**

March 21-22, 2022 | Virtual Conference



**Coalesce Research Group**

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## 3<sup>rd</sup> Online International Conference on Renewable Energy and Sustainable Technologies

Day 1 - March 21, 2022 (11:00-17:45 GMT)

11:00 - 11:15 Introduction

### Oral Presentation

11:15 - 11:40 Environmental migration effects of air pollution: Micro-level evidence from  
**Qingbin Guo**, Hainan University, China

11:40 - 12:05 CRISPR-Cas technology: Emerging applications in clinical microbiology and infectious diseases  
**Qiaoyi Wu**, The First Affiliated Hospital of Fujian Medical University, China

12:05 - 12:30 Restoring peatland and growing renewable energy: Opportunities, challenges and the way forward in Indonesia  
**Siti maimunah**, Instiper yogyakarta, Indonesia

12:30 - 12:55 Feasibility of tetracycline degradation by means of ultrafine-bubbles ozonation-Effect of anions  
**Chikang Wang**, Yuanpei University of Medical Technology, Taiwan

### Keynote Presentation

12:55 - 13:25 Annalise on the possible deployment in the practice of the PVPP without the support of the PPA in Albania  
**Atty. Lorenc Gordani**, Tirana Business University (TBU), Albania

### Lunch (13:25 - 14:00)

14:00 - 14:25 Hydrothermal carbonization of grape pomace-form waste to potential biofuely  
**J. Petrović**, Institute for Technology of Nuclear and Other Mineral Raw Materials, Serbia

### Oral Presentation

14:25 - 14:50 Implementation of a database on solar resources for the design of pv solar technologies  
**Shermantaeva Zhazira Utegenova**, Al-Farabi Kazakh National University, Kazakhstan

14:50 - 15:15 Bubbling fluidized bed gasification of wood chips biomass  
**L. Zaccariello**, University of Campania "Luigi Vanvitelli", Italy

15:15 - 15:40 Compostable plastics in marine environment: Temporal dynamic of bacterial biofilm structure and polymer degradation  
**Delacuvellerie Alice**, University of Mons, Belgium

15:40 - 16:05 Effects of two models instructional strategies on students' attitude to climate change concepts in social studies for sustainable development  
**Olawale Oyemade Oyekanmi**, University of Ibadan, Nigeria

16:05 - 16:30 MEAMOMU same polarity coupler in a vacuum tube model  
**Gregory Spaulding**, Magnetic Voltage Source, USA

16:30 - 16:55 Wind energy conversion systems (WECS) generators: A review  
**Jamshed**, Sukkur Iba University, Pakistan

16:55 - 17:20 Estimation of carbon sequestration in *Acacia mangium* wild plantations at the Pinar del Río Agroforestry Company  
**Luis Miguel Triana Garcia**, University of Pinar del Río, Cuba

17:20 - 17:45 Properties of gin roller covering materials for cotton double roller gins – investigation of biopolymers in biofibres and microbial cellulose towards sustainable textile engineering  
**Vijayan Gurusurthy Iyer**, Arunai Engineering College, India

Day 1 Concludes

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Day 2, March 22, 2022 (11:00-16:20 GMT)

### Keynote Presentation

11:30 - 12:00 Gasification and syngas cleaning system for the catalytic reactions to produce chemicals  
**Cemil Koyunoğlu**, Tolay Energy Consulting, Turkey

12:00 - 12:30 Estimation of resources costs vs. conventional sources costs  
**Abdullah M. Al-Shaalan**, King Saud University, Saudi Arabia

### Oral Presentation

12:30 - 12:55 Experimental study of the degradation of biodegradable polymers under different culture conditions  
**Kouider Elouahed Asmaa**, Hassiba Benbouali University of Chlef, Algeria

12:55 - 13:20 Community support services as correlate senior secondary school students' attitude to waste management in Ona-Ara local government, Oyo State, Nigeria  
**Oluwaseun Oyewole**, Tai Solarin College of Education, Nigeria

### Lunch (13:20 - 13:50)

13:50 - 14:15 Internet of Things (IoT) & artificial intelligence for sustainable development  
**Vinay Kumar Nassa**, Sharad Institute of Technology College of Engineering Ichalkaranji, India

14:15 - 14:40 Challenges for the expansion of energy resources distributed in Brazil in the coming years.  
**Vanderlei Martins**, Universidade Federal Fluminense, Brazil

14:40 - 15:05 Synthesis and characterization of conducting polymers and their biomedical applications  
**Rizwan Arif**, Lingaya's Vidyapeeth, India

14:40 - 15:05 Optimum number of aggregators based on power consumption, cost, and network lifetime in advanced metering infrastructure architecture for smart grid internet of things  
**Alireza Ghasempour**, University of Applied Science and Technology, Iran

14:00 - 14:25 Hydrothermal carbonization of grape pomace-form waste to potential biofuels  
**J. Petrović**, Institute for Technology of Nuclear and Other Mineral Raw Materials, Serbia

15:05 - 15:30 Biofuel: An eco-friendly energy source  
**Pradip Lingfa**, North Eastern Regional Institute of Science & Technology, India

15:30 - 15:55 Quantum-classical mechanics: Principles, applications, and prospects  
**Vladimir V. Egorov**, Russian Academy of Sciences, Russia

15:55 - 16:20 Application of artificial intelligence in traffic management  
**Veljko Radičević**, Academy of Technical and Art Applied Studies Belgrade, Serbia

Day 2 Concludes

***Day-1***  
***Keynote Presentations***



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## HYDROTHERMAL CARBONIZATION OF GRAPE POMACE-FORM WASTE TO POTENTIAL BIOFUEL

**Jelena Petrović, Marija Ercegović, Marija Simić, Marija Koprivica, Marija Kojić and Jelena Dimitrijević**

*Institute for Technology of Nuclear and Other Mineral Raw Materials, Serbia*

### Abstract

**Background:** Over the years, the mass utilization of fossil fuels causes numerous harmful effects on the environment. Therefore, great attention is paid to the implementation of technologies that would enable the production of biofuels from renewable sources. Hydrothermal carbonization (HTC) is recognized as one of the highly efficient and promising technologies for the production of value-added materials from wet and waste biomass.

**Objective:** The main goal of this study is the valorization of waste grape pomace (GP) using HTC technology. Emphasis will be placed on the examination of the influence of process temperature on the selected structural and fuel characteristics of the obtained solids (hydrochars).

**Methods:** For the preparation of hydrochars 10g of GP and 150 mL of ultrapure water were carbonized using laboratory autoclave (Carl Roth, Model II). Carbonization was carried out at 180, 200, 220, 240 and 260 °C within 1 h. Obtained hydrochars (H180, H200, H220, H240 and H260) were separated from process water, rinsed and dried to constant weight. Elemental content of solid (C, H, N, S) was performed using Vario EL III; C, H, N, S/O Elemental Analyzer, while O contents and HHV were calculated.

**Results:** Obtained results showed that carbonization temperature significantly influences the structural characteristics of produced hydrochars. The C content was increased from 48.9% (GP), up to 69.9% (H260) with the temperature increase, while the content of other elements was decreased. Observed changes in elemental composition are caused by dehydration and decarboxylation of biomass during the HTC process. Additionally, the HHV of GP was 21.64 MJ/kg, while it was increased upon carbonization up to 26.78 MJ/kg (H260).

**Conclusion:** Preliminary results of this study determined that implementation of HTC technology improves fuel characteristics of GP and may represent a suitable route for the utilization of waste biomass.

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### Biography

Jelena Petrovic, finished MS studies at the Faculty of Natural Sciences and Mathematics, University of Novi Sad in 2011. Doctoral studies at the Faculty of Technology and Metallurgy, University of Belgrade she ended in 2017. Since 2013, Jelena Petrović has been employed at the Institute for Technology of Nuclear and Other Raw Mineral Materials. Her investigations are based on the implementation and optimization of the hydrothermal carbonization process in order to valorize the agricultural residues into value-added products. As an author or coauthor, she published over 90 publications in the form of scientific papers and conferences.