THE CARIBBEAN ACADEMY OF SCIENCES (CAS)
REGIONAL EXECUTIVE
2024 GRADUATE STUDENT WEBINAR SERIES

🕓 **Date/Time: September 27th, 2024 at 1:00 PM (Trinidad & Tobago Time)**

🔗**Platform: Zoom (Virtual Only)**

🔗**Registration Links:**
Ms. Shanice Martin:
https://docs.google.com/forms/d/e/1FAIpQLSeA7Ym681f5nr8NJtuu2IfGRjGEKhoABhrOV7LKTbsygBB_mQ/viewform?usp=sharing

🔗**Evaluation Links:**
Ms. Shanice Martin:
https://docs.google.com/forms/d/e/1FAIpQLSesRQEgNblB7ZXvrsbVATZ6LptI4-Ugu0JXCe0k3F-4Vcnl5Q/viewform?usp=sharing

🔗**Zoom Credentials:**
Join Zoom Meeting:
https://sta-uwi-edu.zoom.us/j/97869675126?pwd=QUiJecv8asCCcFjS5s6GhufaTIyaIS.1
Meeting ID: 978 6967 5126
Passcode: 095601

PROGRAMME

01:00 - 01:15 pm - Opening Remarks
Prof. Mark Wuddivira (President, CAS Regional Executive)

01:16 - 02:00 pm - Graduate Student Presentation (1):
A DEEP DIVE INTO THERMOELECTRIC OCEAN THERMAL ENERGY CONVERSION: FEASIBILITY OF IMPLEMENTATION IN JAMAICA
Shanice Martin, and Marhoun Ferhat
Department of Physics, University of the West Indies, Mona, Jamaica

02:01- 02:15 pm - Discussion / Question & Answer

02:16 - 2:30 pm - Closing Remarks

THE CARIBBEAN ACADEMY OF SCIENCES (CAS) REGIONAL EXECUTIVE

Graduate Student Webinar Series

A DEEP DIVE INTO THERMOELECTRIC OCEAN THERMAL ENERGY CONVERSION: FEASIBILITY OF IMPLEMENTATION IN JAMAICA

TOPIC:
CAS GRADUATE STUDENT WEBINAR SERIES-
MS. SHANICE MARTIN

DAY/TIME:
SEPTEMBER 27TH, 2024, 1:16 PM

HTTPS://STA-UWI-EDU.ZOOM.US/J/97869675126?PWD=QUIJECV8ASCCCFJS5S6GHUFATIYAIS.1

Presenter:
Shanice Martin

The University of the West Indies (UWI), Mona, Jamaica.

A DEEP DIVE INTO THERMOELECTRIC OCEAN THERMAL ENERGY CONVERSION: FEASIBILITY OF IMPLEMENTATION IN JAMAICA

SHANICE MARTIN, AND MARHOUN FERHAT
DEPARTMENT OF PHYSICS,
UNIVERSITY OF THE WEST INDIES, MONA, JAMAICA

Abstract:
Ocean thermal energy technology is not a new concept; it has been implemented and used to generate electricity since the 1900's in Hawaii and Japan, and in Jamaica at the time of the energy crisis showed interest in the development of the technology through research from local and international parties. As stated in the Jamaica National Energy Policy 2009-2030 and the Sustainable Development Goals (SDG), there is a need for energy independence (access to clean, modern energy) from imported fossil fuel sources, and a way to directly reduce electricity cost for consumers.. Among the solutions to the SDG issues in Jamaica and the Caribbean is the exploration of Ocean Thermal Energy Conversion (OTEC), not just for electricity generation especially in energy intensive industries, such as tourism and entertainment and bauxite, which are concentrated in the northern and western parishes in Jamaica. These can be seen in Figure 1.
More than electricity, OTEC is capable of providing answers to many global issues such as access to clean water, through desalination, as well as advancements in aquaculture, etc. These can be seen in Figure 2 below. There have been more recent efforts to improve on the technology of OTEC through Thermoelectric OTEC (TE-OTEC). The analysis of TE-OTEC in the paper will look on applicable theory and calculations to determine optimal results and I will also present simulations showing the ideal thermoelectric material based on physical transport properties of thermoelectric components.

Figure 1: Image showing the bathymetry contour of Jamaica; depth greater than 1000m (blue) and less than 1000 m (grey). Source: (Brecha et al. 2021)

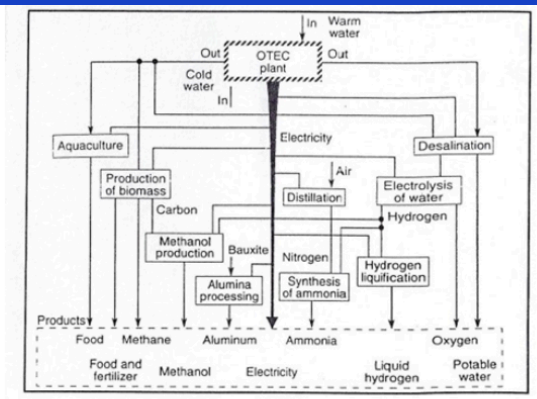

Figure 2: Potential products of OTEC commercialisation. Source: (Avery 2001)

References:

1. Avery, William H. 2001. 'Ocean Thermal Energy Conversion (OTEC)'.
2. Brecha, Robert J, Katherine Schoenenberger, Masaō Ashtine, and Randy Koon Koon. 2021. 'Ocean Thermal Energy Conversion—Flexible Enabling Technology for Variable Renewable Energy Integration in the Caribbean'. Energies 14 (8): 2192. https://doi.org/10.3390/en14082192.
3. Jayadev, T S, D K Benson, and M S Bohn. 1979. 'Thermoelectric Ocean Thermal Energy Conversion'.

Biography

Shanice Martin
Shanice Martin is a graduate student at the University of the West Indies, Mona in the Department of Physics, studying renewable energy. Her research was supervised by Dr. Ferhat of the same department, who specializes in thermoelectricity. Shanice has a background in chemistry, achieving her first degree in General Chemistry in 2018. She is currently employed at the Institute of Jamaica as a conservation scientist.