

Editorial

Preface of the First International Conference on Physics of Semiconductor Devices, Renewable Energies, and Environment [†]

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1. Conference Overview

The University of Bechar, Algeria, held an international conference on physics, renewable energies, and environment (ICPSDREE) from 14 to 16 November 2022. Professors and researchers from various countries attended ICPSDREE 2022, both virtually and in-person. The conference included four regular sessions and one special session, which were organized as follows: physics of semiconductor devices; renewable energies; environment; heat flow and matter transfer (Figure 1).



Figure 1. ICPSDREE 2022 Bechar, Algeria.



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2. Conference Program

The first day, 14 November 2022: Physics of semiconductor devices session in parallel with the environment session. There were 4 interventions—3 internationals on Zoom, 1 national in person; and 20 national interventions—3 in person, 17 on Zoom. The event explored experimental topics related to semiconductors; specifically, their characteristics and applications in optoelectronics. In the morning, the keynote presentation was given by Researcher Professor Shunipati Jagadish from Australia, entitled: “Semiconductor Nanostructures for Optoelectronics Applications”.

In the evening, Professor Merad Abdelkarim from the University of Tlemcen, Algeria, presented an intervention entitled: “Promising alternative new class of A₂BX₆ double lead-free perovskites for solar cell applications”. These were the stages of a partnership project with other international countries.

The second intervention was presented by Professor Tse Nga Ng from the USA, under the title: “Polymeric Devices for Infrared Up conversion Imagers and Energy Storage”.

Most of the national interventions dealt with basic topics, such as are the study of the various properties of semiconductor compounds such as ZnO, Mn₂PdSn, CoFe-TiAs, CsPbCl₃, AgCl, AgBr, CdS, SnO₂, CrCoScGa, KMgO₃, CsBrF₄, (ZnO)_(0.4)(CdO)_(0.6), BaMg₂ × 2N₄, and TlBiTe₂.

The presented results were intended as an incentive for these types of compounds to be used in optoelectronics. Stakeholders compared different generations of solar cells to understand them better or to improve their production.

During the environment session, there were 3 national interventions in person and 18 interventions via Zoom. This session included the following topics: geophysics and its applications in geothermal; underground water and pollution with proposed solutions to all problems.

The second day, 15 November 2022: The organizers arranged two sessions, one on renewable energies, and another one heat flow and matter transfer. The renewable energies session contained one international via Zoom and 21 nationals, which we divide them in 13 via Zoom and 8 in presence. They discussed renewable energies with a focus on solar energy, concentrated solar energy, and studying various types of solar cells. The presentations covered the study of several photovoltaic, thermal, and hybrid systems. They explained how to calculate photovoltaic and thermal sizing and how to cool them to improve efficiency. In the session on flow, heat transfer, and matter, the activities took place in the morning and only for the limited number of participants. The session contained one general intervention and seven national interventions, including four in person and three via Zoom. The session began with a talk from Professor Draoui Belkacem of the University of Bechar, discussing the modeling, identification, and control of buildings in terms of improving their thermal energy performance. The case in point was in southwest Algeria.

The final day, 16 November 2022: it focused This session on medical physics. It contained three interventions, two nationals in attendance and one was international via Zoom. Dr. Rahal Lotfi from the Faculty of Medicine at the University of Bechar performed the initial intervention, giving a talk entitled: “Methods and interests of bioelectric impedance in medical practice”. The doctor discussed biology topics such as the environment, intracellular fluid (ICF), and extracellular fluid (ECF). He also discussed the phase angle, the resistance ratio, and the relationship between them. The second intervention, given by Prof. Luca VARANI from the University of Montpellier, France, was a presentation entitled: “Investigation of the interactions between biomolecules: a crossroad of physics, electronics, chemistry and biology”.

He talked about Terahertz spectroscopy and its relation to absorption spectrum and diffusion coefficient. Professor Djamila Halich presented about entrepreneurship and the University.

ICPSDREE 2022 hosted over 50 physical participants and over 60 virtual participants (Figure 2 presents the most participants). It included four keynote speakers (from Algeria,

Australia, the USA, and France), one guest speaker, three invited speakers, and one hundred talks in oral sessions.



Figure 2. ICPSDREE 2022 participants.

3. Conference Committee

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Prof. Abdelhak MAAZOUZI (U. Bechar, Algeria)

Prof. Syham KADRI (U. Bechar, Algeria)
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4. Conference Speaker

Figure 3 sets introduces the speakers at our conference.

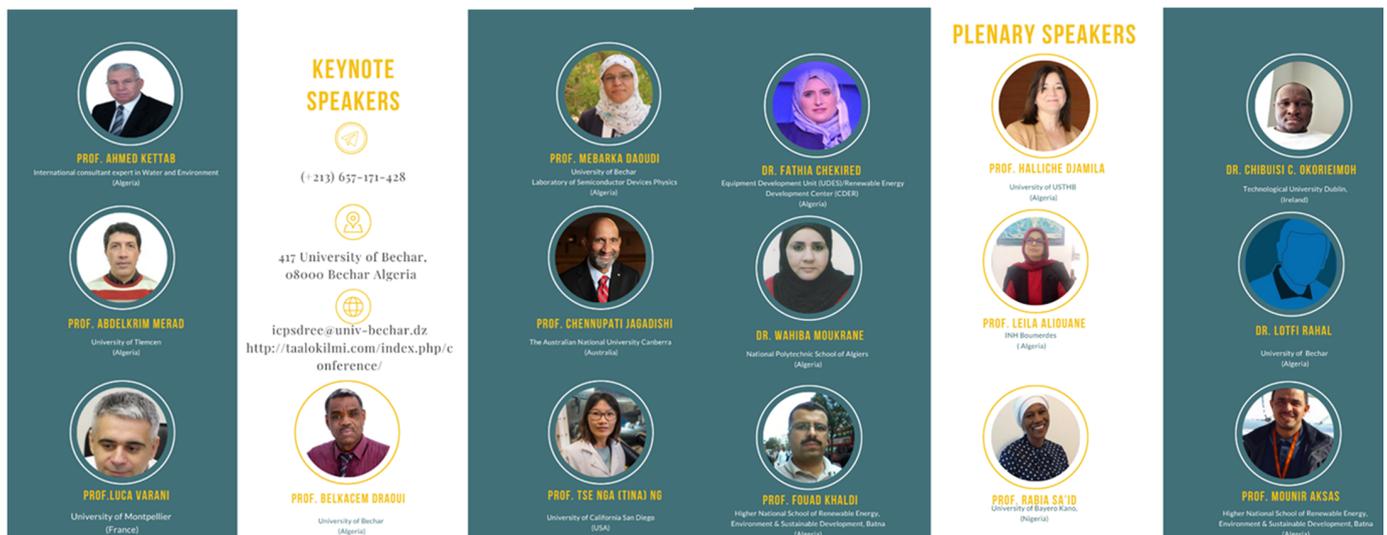


Figure 3. Conference speakers.

5. Conference Sponsor

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Figure 4. ICPSDREE sponsors.

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