A Two Day International Workshop on “Recent Trends in Energy Harvesting and Storage Technologies by the Academic Staff College of KL University during 19th and 20th January 2023

That sounds like an exciting event! A two-day international workshop on "Recent Trends in Energy Harvesting and Storage Technologies" hosted by the Academic Staff College of KL University on 19th and 20th January 2023 would likely cover various aspects of energy harvesting and storage technologies.

Resource Persons:

1. Dr.Bhaskar Dudem  Research Fellow

University of Surrey, England, United Kingdom

**Title:** Triboelectric Smart Sensors for Human Machine Interface

**2.** Dr. Dhanasekar Kesavan

 Post-doctoral Researcher

Jeju National University, South Korea

3.Dr.Koushik Bhunia

Post-doctoral Researcher (NRF Young Investigator)

Jeju National University, South Korea

4.Dr.Natarajan Subramaniam

JSPS Researcher Fellow

Waseda University, Japan

Date                :  19th and 20th January 2023

Venue             :  Peacock Hall & online

Typically, such workshops might include the following components:

1. **Keynote Speeches:** Eminent researchers and experts in the field may deliver keynote speeches to provide an overview of the current trends and challenges in energy harvesting and storage technologies.
2. **Technical Sessions:** These sessions would involve presentations and discussions on specific topics within the field. Participants may share their research findings, innovative approaches, and insights.
3. **Workshops or Tutorials:** Practical sessions or tutorials may be conducted to give participants hands-on experience with relevant tools or equipment.
4. **Panel Discussions:** Panels with experts may discuss key issues and potential solutions in the field, fostering interactive and insightful conversations.
5. **Poster Presentations:** Attendees might have the opportunity to present their research through posters, encouraging networking and knowledge exchange.
6. **Networking Opportunities:** Coffee breaks, lunches, and social events can provide a platform for participants to connect with their peers, fostering collaborations and partnerships.
7. **Exhibition or Demonstration Area:** This is where companies and organizations can showcase their products, services, or technologies related to energy harvesting and storage.
8. **Closing Ceremony:** The workshop might conclude with a closing ceremony where achievements and highlights of the event are acknowledged, and future collaborations are discussed.
9. **Certificates and Awards:** Certificates of participation, best paper awards, or recognitions for outstanding contributions might be given out during the event's closure.
10. **Publication Opportunities:** Some workshops offer the chance to publish research papers in affiliated journals or conference proceedings.

Attendees expressed appreciation for the inputs from the resource persons especially in the areas of energy harvesting and storage technologies. It's an excellent opportunity for learning, networking, and staying updated with the latest advancements in the field. Make sure to keep an eye on the official event website or communications from KL University for details on registration, speakers, and the agenda as the event approachesEnergy harvesting and storage technologies are rapidly evolving, with new advances being made all the time. These technologies are essential for powering a wide range of devices, from wearable electronics to implantable medical devices to self-powered IoT sensors.

Energy Harvesting Technologies

Energy harvesting technologies convert ambient energy sources, such as solar, wind, thermal, and kinetic energy, into electrical energy. This energy can then be used to power devices or stored for later use.

Some of the most recent advances in energy harvesting technologies include:

* Perovskite solar cells: Perovskite solar cells are a new type of solar cell that has the potential to be more efficient and less expensive than traditional silicon solar cells.
* Organic photovoltaics (OPVs): OPVs are another type of solar cell that is made from organic materials. OPVs are flexible and lightweight, making them ideal for applications such as wearable electronics and Internet of Things (IoT) devices.
* Piezoelectric energy harvesters: Piezoelectric energy harvesters convert mechanical energy into electrical energy. These harvesters can be used to harvest energy from sources such as human footsteps, vibrations from machinery, and ocean waves.
* Triboelectric energy harvesters: Triboelectric energy harvesters convert the energy generated by the contact and separation of two surfaces into electrical energy. These harvesters are very simple and inexpensive to manufacture, making them a promising technology for large-scale energy harvesting applications.

Energy Storage Technologies

Energy storage technologies are essential for storing the energy harvested from ambient sources. This stored energy can then be used to power devices when the ambient energy source is not available, such as at night or when the wind is not blowing.

Some of the most recent advances in energy storage technologies include:

* Lithium-ion batteries: Lithium-ion batteries are the most common type of battery used in portable electronics and electric vehicles. Lithium-ion batteries have high energy density and power density, making them ideal for these applications. However, lithium-ion batteries can be expensive and have safety concerns.
* Solid-state batteries: Solid-state batteries are a new type of battery that uses a solid electrolyte instead of a liquid electrolyte. Solid-state batteries are safer and more energy-dense than lithium-ion batteries. However, solid-state batteries are still in development and are not yet commercially available.
* Flow batteries: Flow batteries are a type of battery that stores energy in two separate liquid electrolytes. Flow batteries have a long lifespan and can be scaled up to store large amounts of energy. However, flow batteries can be expensive and require a lot of space.
* Flywheel energy storage: Flywheel energy storage systems store energy in a rotating flywheel. Flywheel energy storage systems are very efficient and have a fast response time. However, flywheel energy storage systems can be expensive and have limited energy storage capacity.

Applications of Energy Harvesting and Storage Technologies

Energy harvesting and storage technologies are being used in a wide range of applications, including:

* Wearable electronics: Energy harvesting and storage technologies are essential for powering wearable electronics, such as smartwatches, fitness trackers, and augmented reality devices.
* Implantable medical devices: Energy harvesting and storage technologies are being used to develop self-powered implantable medical devices, such as pacemakers and glucose sensors.
* IoT sensors: Energy harvesting and storage technologies are being used to power IoT sensors that are used to monitor a wide range of things, such as environmental conditions, industrial processes, and infrastructure.
* Electric vehicles: Energy harvesting and storage technologies are being used to develop range extenders for electric vehicles.

Conclusion

Energy harvesting and storage technologies are rapidly evolving and have the potential to revolutionize the way we power our devices. These technologies have the potential to reduce our reliance on fossil fuels and create a more sustainable future.

Additional Information

In addition to the technologies mentioned above, there are a number of other energy harvesting and storage technologies that are under development. Some of these technologies include:

* Triboelectric nanogenerators: Triboelectric nanogenerators are a type of energy harvester that uses the triboelectric effect to generate electricity from the contact and separation of two surfaces. Triboelectric nanogenerators are very small and lightweight, making them ideal for applications in wearable electronics and IoT devices.
* Pyroelectric energy harvesters: Pyroelectric energy harvesters convert thermal energy into electrical energy. Pyroelectric energy harvesters can be used to harvest energy from sources such as body heat and waste heat from industrial processes.
* Microbial fuel cells: Microbial fuel cells convert chemical energy from organic matter into electrical energy. Microbial fuel cells can be used to harvest energy from wastewater, agricultural waste, and other sources of organic matter

