# IEEE SusTech 2020

## Report on SusTech 2020

The 2020 7th IEEE Conference on Technologies for Sustainability (SusTech 2020) was held online on April 23-25, 2020 and broadcast from Los Angeles, CA.
See http://ieee.org/sustech/archives/archives for details on the program

The SusTech conference is designed to explore the development and application of science, engineering and technology in achieving a sustainable lifestyle for humanity. It brings together scientists, engineers, technologists and scholars from multiple disciplines to hold a dialogue on environmental issues and collaborate on ideas to develop and utilize innovative tools and intelligent systems to address them. Attendees learn about the tools, connections and proactive solutions to take their sustainability programs to the next level.

SusTech 2020 was impacted by the COVID-19 pandemic, which constrained attendance and required cancellation of several of the plenary events originally scheduled. With gatherings in California restricted and many institutions and companies embargoing travel, the conference switched to a virtual format. We had 50 papers from 17 countries that were spread over 2 days, from 8 AM to 7:10 PM, with breaks and keynote speakers at the opening and at noon. The student poster competition was held online on April 23 followed by two days of conference sessions with keynotes and technical presentations.

### Student Virtual Poster Competition

The Student Poster Competition was live via Zoom on April 23. Teams submitted a PDF of their poster and gave a 10-minute presentation about their project. A total of nine posters were presented online, including from Indonesia and South Africa, which would not have been possible without the virtual format.

- **First Place Winner**
  "Implementation of an Autonomous Charging Platform for the Purposes of Enabling Long-Haul and Off-Grid Operations by Electric Quadcopters"
  Anthony Aboumrad, Joseph Haun, Alexander McGinnis
  Sonoma State University
- **Second Place Winner**
  "Automated Real-Time Sorting and Storage of Recyclable Materials and Waste"
  Nathaniel Ortiz, Mahmood Shaheen, Kyle Stark, Jakeb Tivey
  University of California, Riverside
  University of Redlands
- **Third Place Winner**
  "Multi-Use Wireless Charger"
  Jaime Molinar, Lemuel Laan, Jose Solorio, Jimmy Xiong
  DeVry University, Newark CA Campus

## Technical Program

The technical program was presented on April 24-25 and consisted of twelve technical sessions grouped into eight topical areas with live Keynotes in the morning and at lunchtime. The technical sessions each consisted of nominally 4 20-minute slots with recorded paper presentations in MP4 and live Q&A time with the authors.

## SusTech Conference Keynote Speakers

Friday Morning
Dong Tan, Northrop Grumman Aerospace Systems
"Power Electronics, Smart Grid and Grid Modernization"
As we move forward to transform the current grid from electrical and electromechanical to electronic, electrical, and electromechanical, power electronics will bring a vast reservoir of knowledge in electronic and active control to bear in integrating renewable energy into utility grid. Specific areas where power electronics will make a difference will be discussed in detail. The role of structured microgrids will also be presented as the fundamental building blocks for future grids.

Friday Lunch
Glenn Roquemore, Chancellor, California Southern University
"Lessons learned from the July 2019 Ridgecrest, CA earthquakes, changes how we determine seismic risk in buildings"
The 2019 M7.1 Ridgecrest Earthquake was California's largest in more than 20 years and caused $1 Billion in damage. Faults with the most obvious surface traces may not be the ones that produce the next damaging earthquake.

Saturday Morning
Kay Das, GPS Program Manager, retired
"Challenges of the Connected Vehicle Revolution"
A significant challenge exists in validating real time software-driven prototypes, final systems, and maintaining performance while in operation. This presentation overviews some of the challenges and offers some directions for this burgeoning industry. A spotlight will be shone on lessons learnt from the aviation industry.

Saturday Lunch
Seth Potter, SDP Space Systems
"Orbit Options for Near-Term Space Solar Power"
Studies of space solar power for the commercial grid have usually considered transmitting power from geostationary orbit (GEO), via microwaves at frequencies below 10 GHz. This presentation will consider alternative orbits. Examples of such orbits are highly inclined orbits, which may be sun-synchronous, or have a repeating ground track, or both. In addition, elliptical orbits may be considered.

Technical Papers were presented in 12 sessions covering the following topical areas:

- Energy Efficiency
- Intelligent Transportation Systems & eWaste
- Internet of Things
- Renewable/Alternative Energy
- Smart Grid
- Societal Implications / Quality of Life
- Sustainable Electronics
- Water Resources Management

**Attendance**

A plot of conference attendance over time for Friday and Saturday was obtained from Zoom. A total of 109 unique attendees for the conference sessions. Attendance was faintly consistent over time, although did drop off Friday after 6pm.

- On Thursday evening the Student Poster Contest had 9 presentations with 62 unique participants.
- On Friday the conference sessions had 85 unique participants, with an average online time of 197 minutes.

*Charlie Jackson -Zoom Central*