

# Seminar Announcement



Friday, November 17<sup>th</sup>, 2023 – 1:00 pm

Engineering Science Building (ESB) – Rm 121

## Mission to Mars: One Small Step Before a Giant Leap

**Dr. S. Elango Elangovan**

Co-founder and Chief Scientific Officer  
OxEon Energy

### Abstract:

More than 50 years after Neil Armstrong walked on the moon after traveling 240,000 miles in 76 hours, Perseverance Rover landed on Mars on 18 February 2021. It took seven months and traveled more than 292 million miles. A group of OxEon engineers watched the broadcast hoping to be a part of history.

The historical moment came two months later, on April 20th, when a solid oxide electrolyzer, designed and developed by OxEon Energy, accomplished the mission of electrolyzing the Martian atmosphere's CO<sub>2</sub> to generate oxygen for life support and for Mars Ascent Vehicle ensuring extended exploration and safe return of astronauts. This groundbreaking achievement opens a new chapter in space exploration, offering the potential for producing essential resources (e.g., O<sub>2</sub> and propellants) on extraterrestrial bodies, thereby enabling extended human presence and future missions beyond Earth's orbit.

The combination of historical milestones like the moon landing and the breakthrough in in-situ resource production on Mars serves as a testament of striving to achieve the seemingly impossible. Pushing the boundaries of knowledge, understanding, and technological innovation has been at the heart of these missions. I will use a few examples to illustrate the spirit of discovery, innovation, and perseverance in scientific and engineering advancements. The space focused advances are directly applicable to address our own energy and environmental challenges.

### About the speaker:

Dr. S. Elango Elangovan is a co-founder and Chief Scientific Officer at OxEon Energy. He has over 35 years of solid oxide device development experience, from materials research to cell and stack design and fabrication process optimization. Dr. Elangovan served as the Co-PI on the MOXIE mission, providing guidance in the SOEC development and performance improvements. He has over 25 years of experience as the lead investigator in collaborative projects with industries, universities, and national labs. Dr. Elangovan earned his M.S. in Materials Science from Caltech and Ph.D. in Materials Science and Engineering from the University of Utah. He has 36 issued patents.

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