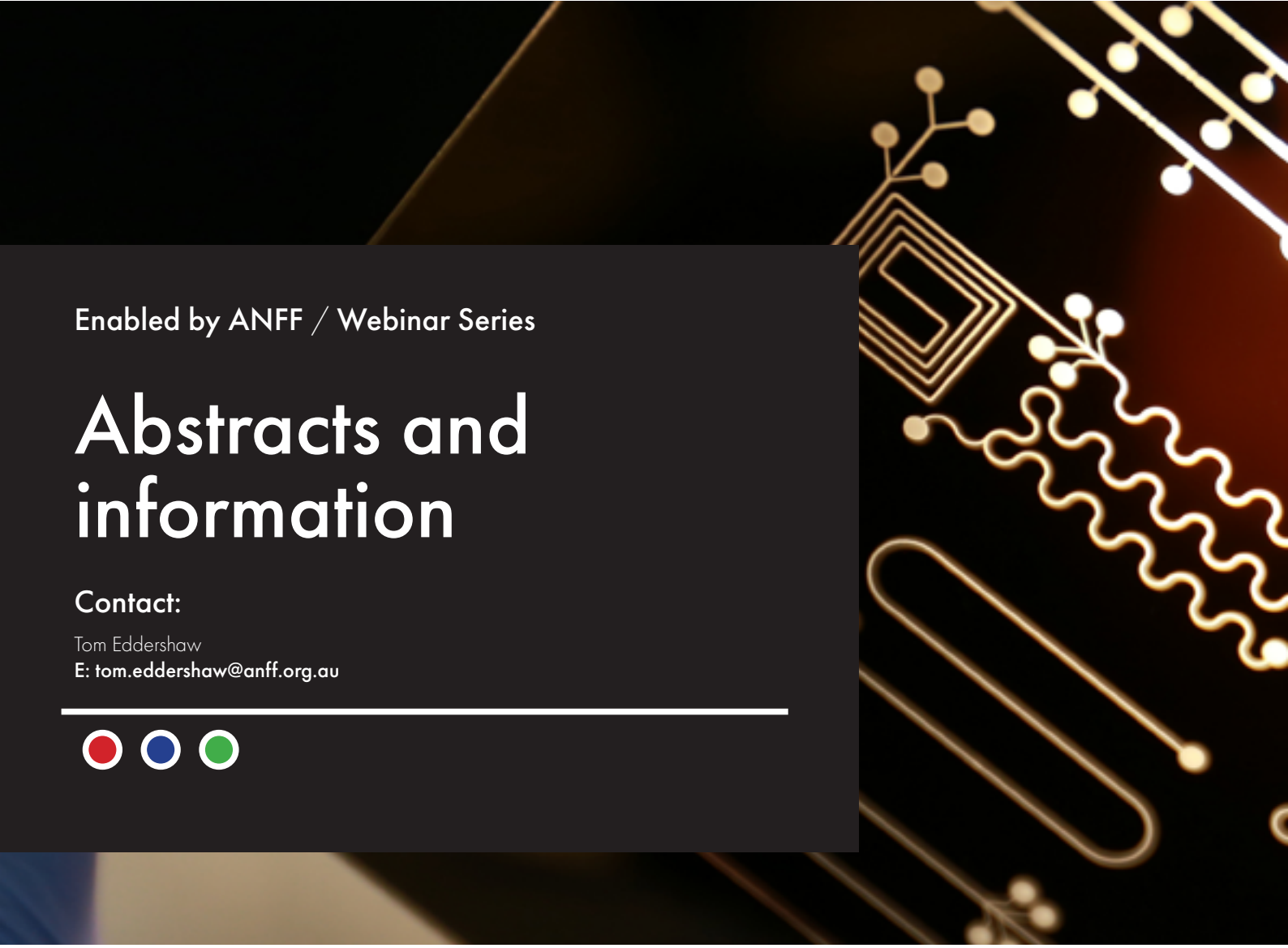

Enabled by ANFF / Webinar Series

Abstracts and information

Contact:

Tom Eddershaw
E: tom.eddershaw@anff.org.au

Starting in October, ANFF is hosting six free webinars to celebrate the exciting science being conducted with the assistance of the network.

We hope that you'll join us to hear about the exciting developments that ANFF has been enabling. Please find the talk abstracts below.

If you have not yet registered for the webinar series, please do so by clicking **this link**. This will ensure you receive the relevant information.

This webinar series has been introduced due to the situation in Melbourne making it unsafe for us to proceed in with the ANFF Retreat and Research Showcase in a responsibly safe fashion.

The "in person" part of the event, themed on the title *Enabled by ANFF*, will be held 11-13 May 2021 in Melbourne. More details to come.

If you have any questions, please contact **Tom Eddershaw**.

This event would not be possible without the support of our valued sponsors.

Event and Gala Dinner sponsor

Dynaflow

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Six webinars will be held, with one focused on each of the following research priority areas.

~~Construction Science (21 October)~~

~~New and novel technologies to enhance construction materials and buildings of the future.~~

~~MedTech (28 October)~~

~~Developments in medical technologies that will help form Australia's economic future.~~

~~Space and Defence (4 November)~~

~~Furthering the technologies designed to aid space exploration, or to view Earth from high above.~~

~~Comms and Cybersecurity (11 November)~~

~~An overview of research that is improving the transmission or security of communication and data.~~

Energy (18 November)

Improving the energy outlook via new technologies or increasing the efficiencies of established ones.

Food and Agribusiness (25 November)

Uses of technology to improve the quality of food, or to help produce it.

Each online session will be one hour long and will feature two talks.

Enabled by ANFF / Webinar Series

Energy

Speaker:

Dr. Siva Karuturi

Australian National University (ANU)

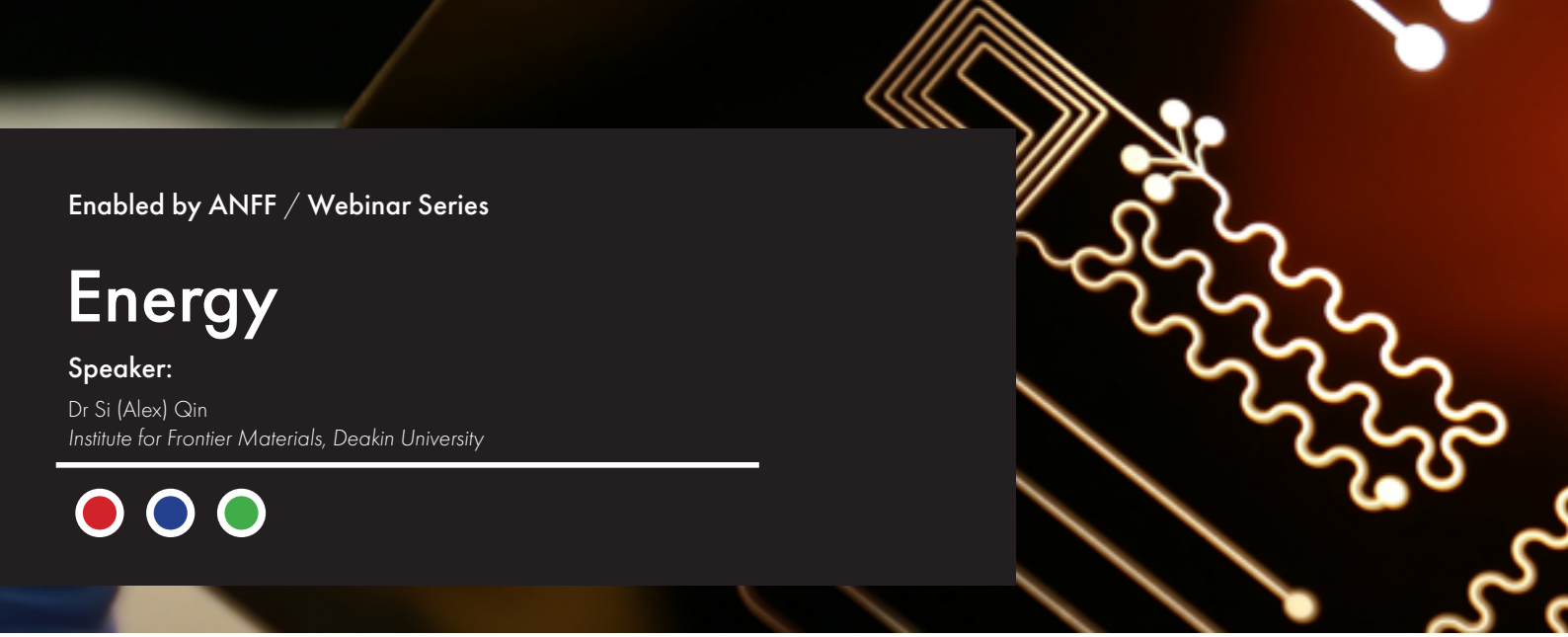
Solar-Driven Water Splitting for Low-Cost Hydrogen Production

Biography: Dr. Siva Karuturi is currently working jointly in the Research School of Electrical, Energy and Materials Engineering and Research School of Physics at the Australian National University (ANU), focusing on the development of semiconductor and catalytic materials for solar hydrogen systems. He received a PhD degree in 2013 from Nanyang Technological University in Materials Science and Engineering. Siva worked as a postdoctoral fellow at the University of New South Wales (UNSW) in the School of Photovoltaics & Renewable Energy Engineering before moving to ANU in 2014.

Siva was a recipient of the Discovery Early Career Researcher Award (DECRA) grant from the Australian Research Council (ARC) in 2015. Following this, he has established a research program on solar fuels at ANU and has been involved in the training and supervision of several PhD, Masters by research and Honours students.

Abstract: Solar energy has the greatest potential to replace fossil fuels among all carbon-free energy sources. Given that electricity only accounts for 30% of global energy consumption, breakthroughs in renewable energy storage and transportation are needed to accomplish the transition to renewable energy, along with the development of a supply chain for renewable energy exports. Hydrogen generated from solar-driven water splitting has the potential to provide clean, sustainable, abundant and transportable energy. Research into hydrogen generation via solar water splitting is gaining traction owing to its potential to generate clean and portable energy.

III-V semiconductors can be tailored into ideal photoelectrodes for PEC water splitting due to their outstanding optoelectronic properties including tunable band gaps covering the entire solar spectrum, band edges straddling water redox potentials, high absorption coefficients and high material quality. In this talk, I will introduce fabrication of III-V semiconductor materials, and their performance as photoelectrodes for water splitting application. Following this, I will introduce photovoltaic-assisted photoelectrodes in tandem configuration for spontaneous hydrogen evolution using solar energy as the sole energy input. In particular, our results on perovskite solar cell integrated photoelectrodes for stand-alone water splitting systems will be discussed.



Enabled by ANFF / Webinar Series

Energy

Speaker:

Dr Si (Alex) Qin

Institute for Frontier Materials, Deakin University

Fibre-based supercapacitors for flexible electronic applications

Biography: Dr Si (Alex) Qin is an Alfred Deakin Research Fellow at Institute for Frontier Materials, Deakin University. He received his B.Eng. in Chemical Engineering from Harbin Institute of Technology in 2009. He was awarded with Ph.D. in 2017 from Deakin University for his work on two-dimensional nanomaterials (2D) and their application in energy storage. His current research interest is on 2D nanomaterials and the development of energy generation and storage devices for wearable applications.

Abstract: Fibre-shaped supercapacitors (FSCs) once integrated into fabrics provide promising energy storage solutions to the increasing demand of wearable and portable electronics. In such device format, however, it is a challenge to achieve outstanding electrochemical performance without compromising flexibility. Here we present a number of fibres we created from pseudocapacitive MXene sheets employing different techniques in pursuing for better flexibility and superior energy storage performance.