

### MESSAGE FROM HoP

Dear EPD Family,

We are approaching a number of key milestones and crossroads of the Pillar. Our third cohort will graduate on September 9th. A number of our faculty colleagues have been successfully promoted and tenured. Our program is accredited and flourishing through the industry appointments, entrepreneurship, and further studies of our graduates. And our inaugural PhD class are successfully defending their research and embarking on their roles in leadership in technology and design.

I am deeply and sincerely impressed and proud of all your contributions. We have a world class set of faculty, staff, researchers, designers and students. The talent level is extreme and the contributions to society are beyond belief.

It has been an honor and pleasure to serve you over the last six years. Maintain and grow the excellence, design ethos, and leadership foundation of what we have built together. Never accept the norm or the usual, but proceed forth with innovation and abandon, by design. You will always be in my heart, mind and soul, as a family to eternity. Cheers!! And always journey forth by giving your very core to EPD and SUTD.

### UPCOMING EVENTS

<b>8 Sep</b> EPD Graduation Gathering	<b>9 Sep</b> SUTD Commencement Ceremony
<b>14 Sep</b> Node Interviews	<b>20 Sep</b> EPD Welcome Party



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### THANK YOU, PROFESSOR KRISTIN WOOD

EPD would like to thank Professor Kristin Wood for his service, leadership and guidance to the Pillar. During his term, Prof. Wood championed Design Thinking in SUTD, infusing it in the pedagogy and curriculum of EPD and instilled us with a strong design ethos. Prof. Wood has been instrumental in outreach efforts, going above and beyond for students. Most notably, under his direction, the EPD Pillar achieved Full Accreditation. We look forward to continue working with him in his existing role as Co-Director of IDC and an esteemed member of our EPD family.



### ACHIEVEMENTS



Congratulations to **Kimberlyn Nicole Tjipto**, our valedictorian! This is the third year that EPD has produced a valedictorian.

- Congratulations to the EPD PhD students and researchers for their poster prizes during the recent **ICMAT2017 Conference** (18-23 June). They are **Sasi Kumar Tippabhottla**, **Hashina Parveen D/O Anwar Ali** and **Huang ZhiXiang**.



### FEATURED STUDY: METAL-OXIDE BASED CHEMICAL SENSORS

Associate Professor Wu Ping (Project Supervisor), Kostiantyn Sopiha (EPD PHD Candidate)

**Description:** As a footprint of human activity, CO<sub>2</sub> can be either beneficial or harmful to the environment, depending on the concentration. Current sensing technologies, however, have very little to propose for determining the CO<sub>2</sub> content in air, making it difficult to monitor and regulate. Our research aims to develop effective and inexpensive sensing tools by utilizing chemical reaction occurring at ceramic surfaces for in-situ monitoring of atmospheric conditions. This sensing mechanism is highly advantageous as it allows to simplify the device architecture and lower the operation temperature of commercial CO<sub>2</sub> sensors, reducing the fabrication and processing costs significantly. Our work effectively combines various first-principle modeling techniques and experiments for better understanding, predicting, and utilizing the sensing features of semiconducting materials.

**Recent Publications:**

- Sopiha, K. V.**, Malyi, O. I., Persson, C., & **Wu, P.** (2017). Band gap modulation of SrTiO<sub>3</sub> upon CO<sub>2</sub> adsorption. *Physical Chemistry Chemical Physics*.
- Ganeshkumar, R.**, **Sopiha, K. V.**, **Wu, P.**, Cheah, C. W., & Zhao, R. (2016). Ferroelectric KNbO<sub>3</sub> nanofibers: synthesis, characterization and their application as a humidity nanosensor. *Nanotechnology*, 27(39), 395607.

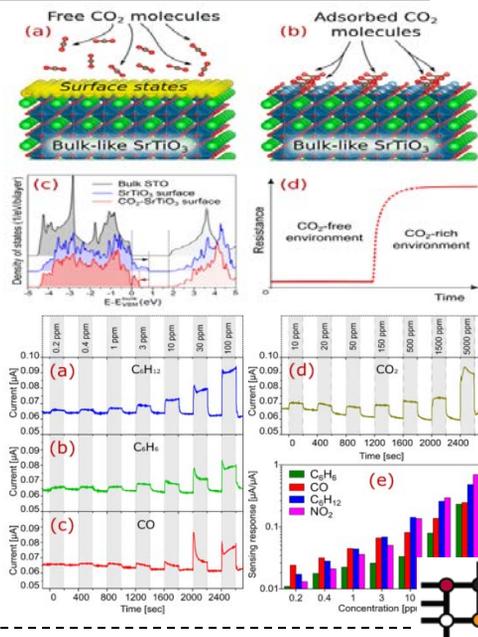


Figure 1. First-principle investigation of band gap modulation effect at SrTiO<sub>3</sub>(001) surfaces for CO<sub>2</sub> sensing applications (Sopiha et al., PCCP, 2017).

Figure 2. Development of an amorphous -silica-based gas sensor (Sopiha et al., to be submitted)