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Department of Physics Faculty of Mathematics and Natural Sciences Universitas Indonesia **WEEKLY SEMINAR**

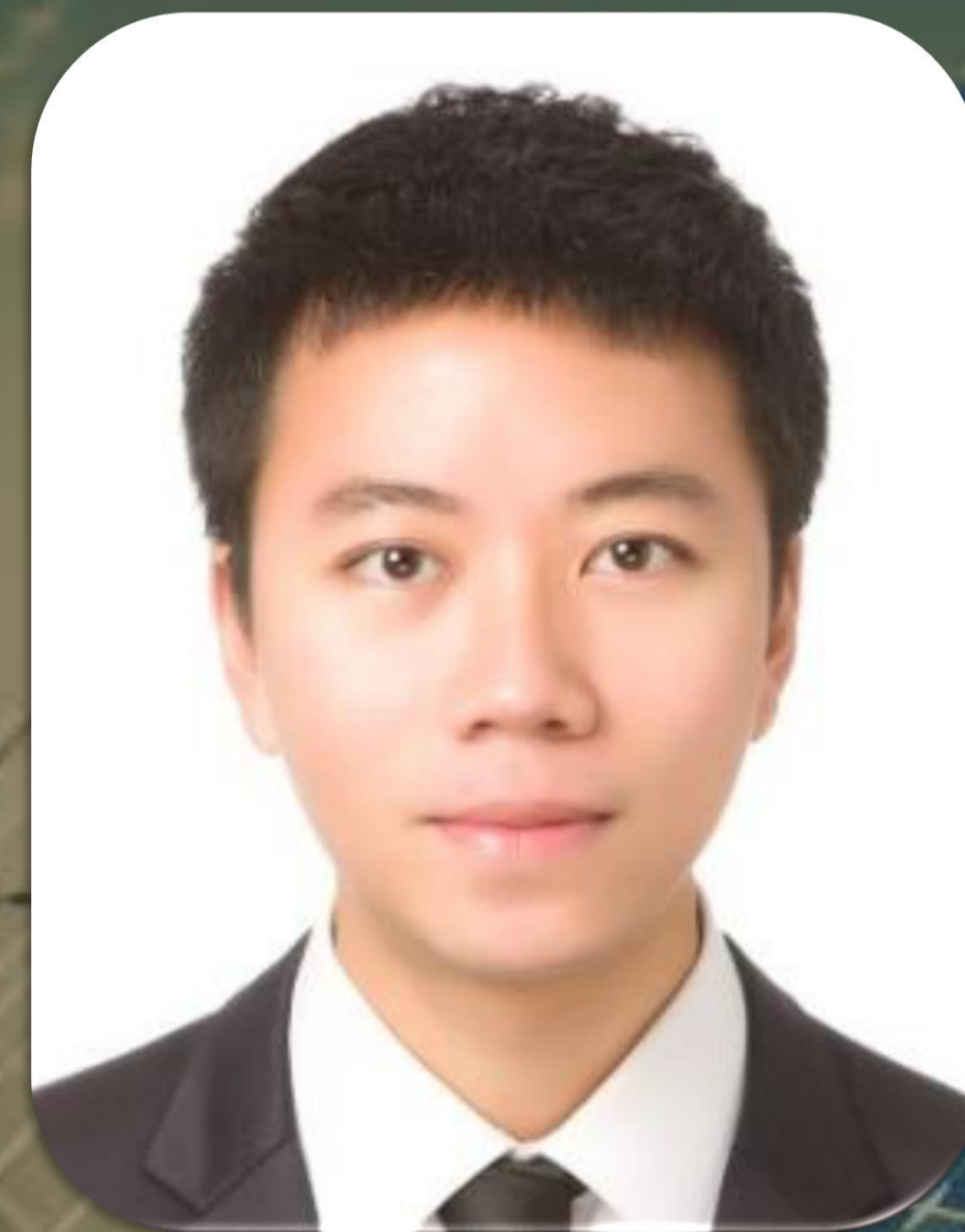
Development of High Performance Organic/Perovskite Solar Cells and Ultra-Flexible Transparent Electrochromic-Supercapacitor

Educational Background:

- Doctor of Philosophy in Physics, National University of Malaysia, Selangor, Malaysia (2014)
- Bachelor of Science in Physics, National University of Malaysia, Selangor, Malaysia (2011)

Selected Publications:

- R. T. Ginting *et al.*, *Mol. Cryst. Liq. Cryst.* **660 (1)**, 79-84 (2018)
- N. Kumar, R. T. Ginting, and J. W. Kang, *Electrochim. Acta* **270**, 37-47 (2018)
- R. T. Ginting *et al.*, *ACS Appl. Mater. Inter.* **9 (41)**, 36111-36118 (2017)
- R. T. Ginting *et al.*, *J. Mater. Chem. A* **5 (9)**, 4527-4534 (2016)
- R. T. Ginting *et al.*, *Nano Energy* **27**, 569-576 (2016)
- R. T. Ginting *et al.*, *J. Mater. Chem. A* **4 (10)**, 3784-3791 (2016)
- R. T. Ginting *et al.*, *Sci. Rep.* **6**, 36475 (2016)



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Abstract

Recently, integration of energy harvesters and storage devices is considered to be one of the most important energy-related technologies as a smart optoelectronic devices. Solar energy is regarded as one of the most important and realizable renewable energy sources due to its advantages as universal energy source and environmental friendly. New generation organic and perovskite solar cells (PSCs) are promising alternative to replace conventional photovoltaics based on silicon. Low cost fabrication process, solution-processable, printable and flexibility of PSCs makes it an attractive technology. New world record highest efficiency of PSCs over 22% was certified recently, however, the photocurrent hysteresis and its air-stability are the major issues needed to be resolved. In this presentation, various approaches will be systematically discussed on how to overcome this issue and effective method to enhance the photovoltaic efficiency. In addition, transparent energy storage and electrochromic devices are also discussed using flexible transparent conducting electrodes. The fabricated electrochromic-supercapacitors (EC-SCs) device able to visually monitor the coloration changes during charge/discharge and simultaneously functioning as a rechargeable energy storage even during extreme bending test. Our finding suggests the great potential of EC-SCs device that can be integrated with PSCs as smart self-powering device.



13.00 – 15.00 WIB



**Main Seminar Room
Dept. of Physics, FMIPA UI
Depok**

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Wednesday

May

2018

This seminar is open to the public (students, lecturers, researchers, etc.) and free of charge