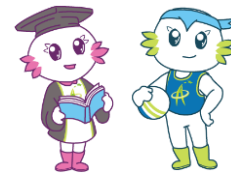


Co-organisers:



Supporting Organisation:

教育局
Education Bureau



[Learn about Gigi & Yoyo](#)

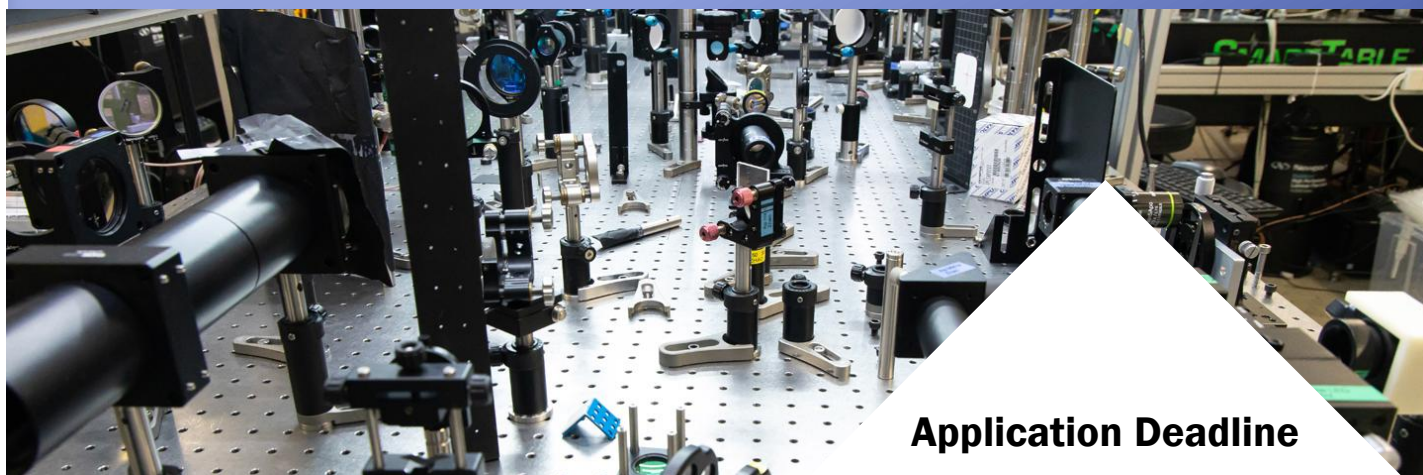
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[Gifted Programme]



Emerging Technology Talk Series by YASHK Science, Opportunities and Challenges 2025: Nanoscale 3D Printing that Realizes the Magics in Fairy Tales

Professor CHEN Shih-Chi
Department of Mechanical and Automation Engineering
The Chinese University of Hong Kong



Application Deadline

**17 July 2025
12:00 noon**

Intended Learning Outcomes

Upon completion of the gifted programme, gifted students should be able to:

1. understand the basics of micro-additive manufacturing;
2. explain the process of two-photon absorption and two-photon polymerization;
3. describe the impact and new possibilities of printing nanometer-scale structures and objects.



◆ Gifted Programme Introduction

Is the cloak of invisibility only a fairy tale? If not, how does it work and how do we make one via a nano 3-D printer? 3-D printing is one of the most important technological innovations in the past few decades. Among the various techniques, two-photon polymerization (TPP) is the most precise 3-D printing process (resolution ~ 140 nm) that has been used to create many complex structures for advanced photonic and nanoscale applications, e.g., microrobots, metamaterials, photonic crystals etc. However, to date the technology still remains a laboratory tool due to its high operation cost and limited fabrication rate. This seminar will introduce the recent development on the parallelization of the TPP process based on temporal focusing, where programmable femtosecond light sheets are used to substantially improve the rate without sacrificing resolution. By combining the fast nano 3-D printing solution with volume-shrinkable hydrogel scaffolds, we have demonstrated the fabrication of arbitrary 3-D objects and metamaterial structures of ~20 nm resolution with different materials (e.g., metals, metal oxides, semiconductors etc.) – a recently set world record. This means the nano 3-D printer can realize fairy tale magics, i.e., to fabricate a cloak of invisibility for visible light, and potentially play a large role in fields such as healthcare, clean energy and water, computing, and telecommunications.

◆ Schedule

Date	Time	Venue
26 July 2025 (Saturday)	10:30 a.m. – 12:00 noon	Zoom Meeting

◆ Suitable for

- S1 – S6 HKAGE student members in 2024/25 school year.
- Class size: 280
- * First-come, first-served.

◆ Medium of Instruction

English

◆ Certificate

E-Certificate will be awarded to participants who have attended the talk.

◆ Remark

Starting from the 2023/24 school year, after the first review period, ALL student members must complete the following requirements in each school year in order to maintain their membership:

- Attend One Talk; AND
- Participate in One programme or activity of any kind

This talk is one of the items in the five domains of the Holistic Talk Series. The objective is to facilitate the all-round development of student' gifted potential.



Emerging Technology Talk Series by YASHK

Scientists introduce eye-opening emerging technology to enhance students' motivation to learn.



Trendy Academic Talk Series

Introduce trendy topics to widen the students' horizons.



National Security Talk Series

Understanding the meaning of National Security, enhances students' sense of national identity.



Ignite Life Talk Series

Celebrities share their life-changing moments to enhance students' aspirations for life.



Future Insight Talk Series

Professionals share insights about the latest trends in their industry to help students plan their future.

