

# SETTHIBHAK SUTHITHANAKOM

s.suthithanakom21@alumni.imperial.ac.uk  
Online Portfolio: <https://setthibhak.github.io/>

## EDUCATION

---

**Imperial College London** London, UK  
Master of Research (MRes), **Distinction**, Bioengineering 2022

**Chulalongkorn University** Bangkok, Thailand  
B.E., **Second Class Honors**, Mechanical Engineering 2021

**University of British Columbia** Vancouver, BC, Canada  
Summer Program, Data Science Application in the Medical Science and System Pathophysiology 2019

## RESEARCH EXPERIENCE

---

**Department of Mechanical Engineering, Chulalongkorn University** Bangkok, Thailand  
*Research Assistant with Dr. Ratchatin Chanchaen* 2022-present  
*Funded by the National Research Council of Thailand (NRCT)*

- Introduced the high visibility extruder with the ability for real-time monitoring of printing pressure, volumetric flow, and material properties during 3D printing
- Devised a novel hybrid pressure/volumetric-controlled extrusion scheme for the precise 3D printing of viscoelastic material
- Designed the universal magnetic interface system for printheads to facilitate multi-process fabrication

**Department of Bioengineering, Imperial College London** London, UK  
*Graduate Student with Dr. Christopher Rowlands* 2021-2022

- Proposed an innovative reconfigurable microfluidic device for drug synthesis, leveraging an array of microvalves to redefine flow paths and implement peristaltic fluid transport
- Established the scalable, low-latency, and individually controllable microvalve design

**Veterinary Clinical Stem Cells and Bioengineering Research Unit, Chulalongkorn University** Bangkok, Thailand  
*Intern with Dr. Teerawat Tarasani* Summer 2020

- Engineered a cost-effective bioreactor for mammalian cell culture
- Conducted an analysis of local shear stress applied to cells using Computational Fluid Dynamics (CFD)

**Department of Mechanical Engineering, Chulalongkorn University** Bangkok, Thailand  
*Undergraduate Researcher with Dr. Ratchatin Chanchaen* 2019-2021

- Developed a temperature-controlled system for the 3D printing of hydrogel by implementing extruder heating and print bed cooling
- Fabricated syringe-based positive displacement printhead for 3D printing of various soft matters, including silicone, food paste, and biogel
- Operated and modified commercial 3D bioprinter for the printing of mammalian cell-laden hydrogel

## PUBLICATIONS

---

**S. Suthithanakom**, C. Sithiwichankit, K. Chaiprabha, and R. Chancharoen, “Flexible Actuation with Intrinsic Sensing for Ram Extrusion 3D Printing”, under review. doi: 10.21203/rs.3.rs-3500416/v1

**S. Suthithanakom**, S. Juemjutitam, N. Arunwattanamongkol, T. Wongpakham, A. Pimpin, and R. Chancharoen, “Temperature Control for Hydrogel Bio-Printing” in *2019 IEEE International Conference on Cybernetics and Intelligent Systems (CIS) and IEEE Conference on Robotics, Automation and Mechatronics (RAM)*, IEEE, Nov. 2019, pp. 310–315. doi: 10.1109/CIS-RAM47153.2019.9095808.

## PATENT

---

**Printhead for forming and printing of biomaterial (Pending)**

*Application Number: 2303001495*

Thailand

June 2023

## TALKS AND PRESENTATIONS

---

**SCG Packaging Public Company Limited**

Invited Talk, 3D Printing Technology Overview and Soft Matter 3D Printing

Bangkok, Thailand

Nov 2023

**International School of Engineering (ISE), Chulalongkorn University**

Guest Lecturer, Introduction to Industrial Sensors

Guest Lecturer, Machine Vision Workshop

Bangkok, Thailand

Feb 2023

Feb 2023

**9<sup>th</sup> IEEE International Conference on Cybernetics and Intelligent Systems (CIS) and IEEE Conference on Robotics, Automation and Mechatronics (RAM)**

Conference Presentation, Temperature Control for Hydrogel Bio-Printing

Bangkok, Thailand

Nov 2019

## RELATED PROFESSIONAL EXPERIENCE

---

**Digitech Fabrication Co., Ltd.**

*Co-founder*

Bangkok, Thailand

2023-present

- Co-founded a startup specializing in digital fabrication services, with a primary focus on 3D printing functional engineering parts tailored for engineering education.
- Led the design, optimization, and oversight of the 3D printing process in the production plant.

## SKILLS

---

- Intensively experienced with extrusion 3D printing of soft matter, especially biogels
- 3D Printing technology proficiency and rapid prototyping (FDM, MSLA, SLA)
- Advanced computer-aided design (Fusion360, AutoCAD)
- Customized Printed Circuit Board (PCB) design for production
- Microcontroller programming (C, C++, Python)
- Statistical analysis and multiphysics simulation (R, COMSOL, MATLAB)
- Mammalian cell culture and biomaterial handling

## REFERENCES

---

Ratchatin Chancharoen, Ph.D.  
Associate Professor, Department of Mechanical Engineering, Chulalongkorn University,  
Room 409, Hans Buntli Building, Bangkok 10330  
Ratchatin.C@chula.ac.th

Christopher Rowlands, Ph.D.  
Senior Lecturer, Department of Bioengineering,  
Imperial College London, South Kensington Campus,  
London SW7 2AZ  
c.rowlands@imperial.ac.uk