

Dr Yeong Wai Yee

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RESEARCH AREA

3D Printing, Bioprinting, Metal printing, Electronics printing, Machine learning in 3D Printing.

SCI web of science **H-index: 34, Citation: 4552**(with **8 HIGHLY CITED PAPERS** as of March/April 2020 in the fields of Engineering, Materials Science, Physics, Social Sciences and Clinical Medicine.)

EDUCATION

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| 2007 | PhD (Mechanical and Aerospace Engineering), Nanyang Technological University |
| 2003 | BEng (Hons), 1 st Class (Mechanical and Production Engineering), Nanyang Technological University |

CURRENT POSITION

- 2018 to current – Program Director (3DP), HP-NTU Digital Manufacturing Corp Lab
- 2018 to current - Associate Chair (Students), School of Mechanical and Aerospace Engineering, Nanyang Technological University (Concurrent Appointment)
- 2018 to current - Associate Professor (Tenured), School of Mechanical and Aerospace Engineering, Nanyang Technological University (Concurrent Appointment)
- 2014 to current – Programme Director, Aerospace & Defence Programme, Singapore Centre for 3D Printing, Nanyang Technological University (Concurrent Appointment)

PREVIOUS POSITIONS

- 2013 to 2018 – Assistant Professor, School of Mechanical and Aerospace Engineering, Nanyang Technological University.
- 2010-2013 – Principal Engineer, CIBA Vision, Novartis Singapore.
- 2009- Research Fellow, School of Material Science and Engineering, Nanyang Technological University.
- 2008 – Trainee Scientist, Abbott Vascular, California.
- 2007–Research Engineer, SIMTech, Agency for Science, Technology and Research (A*STAR)

AWARDS

- International award- Inaugural **TCT Woman in 3D Printing Award** 2019, for her significant achievement in 3D printing.
- Finalist for **Lush Award 2018 (Science category)** for developing tissue models for animal-free testing.
- PhD student Eric Guntur - Winner of **Outstanding Award** in the Nanxun Innovation & Entrepreneurship Challenge 2019
- PhD student Huang Sheng - Winner of the **Best Oral Presentation Award** at 2019 4th ICCMME
- **Springer Theses Award** 2017 won by student (Sing Swee Leong) under my supervision.

ACADEMIC RECOGNITION & SERVICES

- Serves as **Associate Editor** in an international journal **Virtual and Physical Prototyping** (VPP), Q1 in SCI with impact factor >6.0.
- Given more than 20 **invited talks** at various platforms including academic conferences and industrial forum in Singapore and internationally (China, USA, Belgium).
- Research featured on **media and news**, including Reuters Science News, Straits Times Channel News Asia and Channel 8.
- Invited as Panel Member Reviewer for **European Research Council ERC Advanced Grant 2020**.

ERC Advanced Grants are prestigious subsidies for active and independent research leaders who have been conducting significant and original research for at least 10 years.

https://erc.europa.eu/sites/default/files/document/file/Panel_Members_ERC_Advanced_Grant_2019.pdf

FUNDING AND COLLABORATIONS

Secured >\$15million funding since 2013, on joint labs, academic research projects and industrial projects. Collaborations partners include academic, companies, hospitals across different schools and disciplines.

PATENTS

- Titanium-Tantalum Alloy and Method of Forming Thereof, 2017 (WO2017048199A1)
- A Hydrogel Composite, 2018 (PCT/SG2018/050094)
- Digital Manufacturing Of A Microfluidic Platform Integrated With Bioprinted Tissue Model As Organ-On-A-Chip For Cell-Based Alternative Testing Models, 2020 (non-drafted Singapore (SG) provisional patent application)
- High Speed Homogenization And Pore Mitigation Strategy For In-Situ Alloying Via Laser Powder Bed Fusion (LPBF), 2020 (non-drafted Singapore (SG) provisional patent application)

SUPERVISION OF GRADUATE STUDENTS

Sole or main supervisor of **4 MSc students and 15 PhD students** (9 graduated). PhD student (Ng Wei Long) named Research Assistant Professor at HP-NTU Digital Manufacturing Corp Lab in 2020, PhD student Sing Swee Leong awarded the NTU Presidential Post-doc Fellowship 2020, postdoctoral fellow (Dr Shweta Agarwala) joined Aarhus University Denmark as Assistant Professor in 2019.

TEACHING ACTIVITIES

3D Printing courses: Developed 3 new degree courses in MAE on topic of 3D Printing based on 2 new textbooks authored; and proposed 6 new courses for lifelong learning skills future initiatives.

3D Printing-enabled pedagogy: Developed new technology for anatomy education using 3D printed haptic biomodel to assist new pedagogy in LKC School of Medicine, where printed anatomy model supplements the use of plastinated cadaver anatomy model.

PUBLICATIONS

H-index: 34; Citation: 4552

Recent journal papers in the last 3 years:

1. J. M. Lee & **W. Y. Yeong** (2020), Engineering macroscale cell alignment through coordinated toolpath design using support-assisted 3D bioprinting, Journal of the Royal Society Interface 17(168), 20200294 (Impact Factor: 3.748, Q2, Rank: 19/71 Multidisciplinary sciences, sciences) DOI: <https://doi.org/10.1080/17452759.2020.1779999>
2. G. D, Goh, S. L. Sing, **W. Y. Yeong** (2020), A review on Machine Learning in 3D printing: Applications, Potential, and Challenges, Artificial Intelligence Review, (Impact Factor: 5.747, Q1, Rank: 16/136 Computer sciences, Artificial Intelligence) DOI: <https://doi.org/10.1007/s10462-020-09876-9>
3. S. L. Sing & **W. Y. Yeong** (2020), Laser Powder Bed Fusion for Metal Additive Manufacturing: Perspectives on Recent Developments, Virtual and Physical Prototyping 15(3), 359 – 370 (Impact Factor: 7.310, Q1, Rank: 2/49 Engineering, Manufacturing) DOI: <https://doi.org/10.1080/17452759.2020.1779999>
4. Y. L. Yap, S. L. Sing & **W. Y. Yeong** (2020), A review of 3D printing processes and materials for soft robotics, Rapid Prototyping Journal, Accepted (Impact Factor: 3.099, Q1, Rank 31/130 Engineering, Mechanical) DOI: <https://doi.org/10.1108/RPJ-11-2019-0302>
5. Shairah Radzi, Heang Kuan Joel Tan, Gerald Jit Shen Tan, **Wai Yee Yeong**, Michael Alan Ferenczi, Naomi Low-Beer, and Sreenivasulu Reddy Mogali (2020), Development of a three-

- dimensional printed heart from computed tomography images of a plastinated specimen for learning anatomy, *Anatomy & Cell Biology*, 53(1). Published. DOI: [10.5115/acb.19.153](https://doi.org/10.5115/acb.19.153)
6. G. E. Luis Adiwati, H. M. Pan, S. L. Sing, R. Bajpai, J. Song, **W. Y. Yeong** (2020), 3D direct printing of silicone meniscus implant using a novel heat-cured extrusion-based printer, *Polymers*, 12(5). Accepted. DOI: <https://doi.org/10.3390/polym12051031> (Impact Factor: 3.164, Q1, Rank: 17/87 Polymer Science).
 7. Huang S., Sing, S.L., Geoffrey deLooze, Robert Wilson, & **Yeong, W. Y.** (2020). Laser powder bed fusion of titanium-tantalum alloys: Compositions and designs for biomedical applications. *Journal of the Mechanical Behavior of Biomedical Materials*, 103775, doi: <https://doi.org/10.1016/j.jmbbm.2020.103775>. (Impact Factor: 3.485, Q1, rank 18/80, Engineering, Bio Engineering)
 8. Lee, J., Sing, S., & **Yeong, W. Y.** (2020). Bioprinting of Multimaterials with Computer-aided Design/Computer -aided Manufacturing. *International Journal of Bioprinting*, 6(1). doi:<http://dx.doi.org/10.18063/ijb.v6i1.245>
 9. Ng, Wei Long; Lee, Jia Min; Zhou, Miaomiao; Chen, Yi-Wen; Lee, Kai-Xing Alvin; **Yeong, Wai yee**; Shen, Yu-Fang, (2020)"Vat polymerization-based bioprinting – process, materials, applications and regulatory challenges", *Biofabrication*, 12(2), 022001, DOI: [10.1088/1758-5090/ab6034](https://doi.org/10.1088/1758-5090/ab6034). (Impact Factor: 7.236, Q1, rank 6/80, Engineering, Bio Engineering)
 10. J. H. K.Tan, S. L. Sing, **W. Y. Yeong** (2020), Microstructure modelling for metallic additive manufacturing: a review, *Virtual and Physical Prototyping*, 15(1), 87-105, DOI: [10.1080/17452759.2019.1677345](https://doi.org/10.1080/17452759.2019.1677345) (Impact Factor: 6.825, Q1 rank, 2/49, Material, Manufacturing)
 11. Luis, E., Pan, H. M., Sing, S. L., Bastola, A. K., Goh, G. D., Goh, G. L., ... & **Yeong, W. Y.** (2019). Silicone 3D Printing: Process Optimization, Product Biocompatibility, and Reliability of Silicone Meniscus Implants. *3D Printing and Additive Manufacturing*, 6(6), 319-332. <https://doi.org/10.1089/3dp.2018.0226>. (Impact Factor: 3.259, Q2, rank 16/49, Engineering, Manufacturing)
 12. Cher Fu Tey, Xipeng Tan, Swee Leong Sing, **Wai Yee Yeong** (2019), Additive manufacturing of multiple materials by selective laser melting: Ti-alloy to stainless steel via a Cu-alloy interlayer, *Additive Manufacturing*, 100970. <https://doi.org/10.1016/j.addma.2019.100970>. (Impact Factor: 7.173, Q1, rank 1/49, Engineering, Manufacturing)
 13. G. L. Goh, S. Agarwala, **W. Y. Yeong** (2019), Aerosol-jet Printed Preferentially Aligned Carbon Nanotube Twin-line for Printed Electronics, *ACS Applied Materials and Interfaces* (Impact Factor: 8.456, Q1, rank: 27/293, MATERIALS SCIENCE, MULTIDISCIPLINARY - SCIE)

14. Swee Leong Sing, Sheng Huang, **Wai Yee Yeong** (2020), Effect of solution heat treatment on microstructure and mechanical properties of laser powder bed fusion produced cobalt-28chromium-6molybdenum, Materials Science and Engineering: A, Volume 769, 138511, <https://doi.org/10.1016/j.msea.2019.138511>. (Impact Factor: 4.081, Q1, rank 7/76, Metallurgy & metallurgical engineering)
15. B. H. K. Ho, C. J. Chen, G. J. S. Tan, **W. Y. Yeong**, J. H. K. Tan, A. Y. H. Lim, M. A. Ferenczi & S. R. Mogali (2019), Multi-material three dimensional printed models for simulation of bronchoscopy, BioMed Central Medical Education, Available Online. DOI : 10.1186/s12909-019-1677-9 MEED-D-19-00212R2 (IF: 1.870, Q2, rank 18/41, EDUCATION, SCIENTIFIC DISCIPLINES - SCIE)
16. W. L. Ng & **W. Y. Yeong** (2019), The future of skin toxicology testing – 3D bioprinting meets microfluidics, International Journal of Bioprinting 5(2.1), 237
17. G. L. Goh, N. Saengchairat, S. Agarwala, **W. Y. Yeong** & T. Tran (2019), Sessile droplets containing carbon nanotubes: a study of evaporation dynamic and CNTs alignment for printed electronics, Nanoscale 11(22), 10603-10614 DOI: 10.1039/c9nr03261d. (impact factor 7.233, Q1, Rank 15/146 in Physics, Applied)
18. M. H. Kathawala, W. L. Ng, D. Liu, M. W. Naing, **W. Y. Yeong**, K. L. Spiller, M. Van Dyke & K. W. Ng (2019), Healing of chronic wounds – An update of recent developments and future possibilities, Tissue Engineering Part B: Reviews (Available Online) <https://doi.org/10.1089/ten.TEB.2019.0019>. Impact Factor: 6.512, Q1, rank 2/26 in Cell & Tissue Engineering)
19. V. Dikshit, A.P. Nagalingam, G. D. Goh, S. Agarwala, **W. Y. Yeong** & J. Wei (2019), Quasi-static indentation analysis on three-dimensional (3D) printed continuous-fiber sandwich composites, Journal of Sandwich Structures and Materials (Available Online) 1099636219836058. <https://doi.org/10.1177/1099636219836058>. (impact factor: 2.776, Q1, rank 5/33, Materials Science, Characterization and testing)
20. J. M. Lee, W. L. Ng & **W. Y. Yeong** (2019), Resolution and shape in bioprinting: strategizing towards complex tissue and organ printing, Applied Physics Reviews 6(1), 011307. (impact factor: 12.894, Q1, rank 8/146 in Physics, Applied)
21. G. D. Goh, Y. L. Yap, H. K. J. Tan, S. L. Sing, G. L. Goh, **W. Y. Yeong**, (2019) Process-structure-properties in Polymer Additive Manufacturing via Material Extrusion: A review. Critical Reviews in Solid State and Materials Sciences, 1-21. (impact factor: 5.656, Q1, rank 43/285, Materials Science, Multidisciplinary) (DOI: <https://doi.org/10.1080/10408436.2018.1549977>)
22. G. D. Goh, Y. L. Yap, S. Agarwala & **W. Y. Yeong** (2019), Recent progress in additive manufacturing of fiber reinforced polymer composite, Advanced Materials Technologies 4,

1800271. (impact factor 4.622, Q1, rank: 52/285, Metallurgy and Metallurgical Engineering) (DOI: <https://onlinelibrary.wiley.com/doi/pdf/10.1002/admt.201800271>)
23. J. M. Lee, S. L. Sing, M. M. Zhou & **W. Y. Yeong** (2018), 3D bioprinting processes: A perspective on classification and terminology, *International Journal of Bioprinting* 4(2), 151
 24. S. Agarwala, J. M. Lee, **W. Y. Yeong**, M. Layani & S. Magdassi (2018), 3D printed bioelectronic platform with embedded electronics. *MRS Advances* 3(50), 3011-3017 . <https://doi.org/10.1557/adv.2018.431>
 25. G. L. Goh, S. Agarwala & **W. Y. Yeong** (2018), Directed and on-demand alignment of carbon nanotube: A review towards 3D printing of electronics. *Advanced Materials Interfaces* 6, 1801318 <https://doi.org/10.1002/admi.201801318> (impact factor: 4.834, Q1, rank 49/285, Materials Science, Multidisciplinary)
 26. S. Agarwala, G. L. Goh, T. S. D. Le, J. An, Z. K. Peh, **W. Y. Yeong** & Y. J. Kim (2018), Wearable bandage-based strain sensor for home healthcare: Combining 3D aerosol jet printing and laser sintering, *ACS Sensors* 4(1), 218-222 DOI: 10.1021/acssensors.8b01293. (impact factor: 5.711, Q1, rank 33/170 in Chemistry, Multidisciplinary)
 27. S. Agarwala, G. L. Goh and **W. Y. Yeong**, "Aerosol Jet Printed Strain Sensor: Simulation Studies Analyzing the Effect of Dimension and Design on Performance (September 2018)," in *IEEE Access*, vol. 6, pp. 63080-63086, 2018. doi: 10.1109/ACCESS.2018.2876647. (impact factor: 3.557, Q1, rank 24/148 in Computer Science, Information Systems)
 28. S. L. Sing, F. E. Wiria & **W. Y. Yeong** (2018), Selective laser melting of titanium alloy with 50 wt% tantalum: Effect of laser process parameters on part quality, *International Journal of Refractory Metals and Hard Materials* 77, 120-127. <https://doi.org/10.1016/j.jirmhm.2018.08.006>. (impact factor 2.606, Q1, rank: 11/75, Materials Science, Interdisciplinary)
 29. P. Shi, E. Y. S. Tan, **W. Y. Yeong**, H. Y. Li & A. Laude (2018), A bilayer photoreceptor-retinal tissue model with gradient cell density design: A study of microvalve-based bioprinting, *Journal of Tissue Engineering and Regenerative Medicine* 12(5), 1297-1306. <https://doi.org/10.1002/term.2661> (Impact factor 3.989, Q1, rank: 29/160 in Biotechnology & Applied Microbiology)
 30. E. Y. S. Tan, P. Shi, C. J. Choo, A. Laude & **W. Y. Yeong** (2018), Tissue engineering of retina and Bruch's membrane: A review of cells, materials and processes, *British Journal of Ophthalmology* 102(9), 1182-1187. <http://dx.doi.org/10.1136/bjophthalmol-2017-311390> (Impact factor 3.806, Q1, rank: 6/59 in Ophthalmology)
 31. W. L. Ng, M. H. Goh, **W. Y. Yeong** & M. W. Naing (2018), Applying macromolecular crowding to 3D bioprinting: Fabrication of 3D hierarchical porous collagen-based hydrogel constructs, *Biomaterials Science* 6(3), 562-574. DOI: 10.1039/C7BM01015J (Impact Factor: 4.210, Q1, rank 8/33 in Materials Science, Biomaterials)

32. W. L. Ng, Y. J. Tan, **W. Y. Yeong** & M. W. Naing (2018), Proof-of-concept: 3D bioprinting of pigmented human skin constructs, *Biofabrication* 10(2), 025005. doi: 10.1088/1758-5090/aa9e1e.(Impact factor: 5.24, Q1, rank: 5/77 in Engineering, Biomedical)
33. S. L. Sing, F. E. Wiria & **W. Y. Yeong** (2018), Selective laser melting of lattice structures: A statistical approach to manufacturability and mechanical behavior, *Robotics and Computer-Integrated Manufacturing* 49, 170-180 (Impact factor: 2.846, Q1, rank: 24/105 in Computer science).
34. V. Dikshit, A. P. Nagalingam, Y. L. Yap, S. L. Sing, **W. Y. Yeong** & J Wei (2018), Crack monitoring and failure investigation on inkjet printed sandwich structures under quasi-static indentation test, *Materials & Design* 137, 140-151 (Impact factor: 4.364, Q1, rank: 46/ 275 in Materials Science, Interdisciplinary)
35. G. L. Goh, S. Agarwala, Y. J. Tan & **W. Y. Yeong** (2018), A low cost and flexible carbon nanotube pH sensor fabricated using aerosol jet technology for live cell applications, *Sensors and Actuators B: Chemical* 260, 227-235 (Impact factor: 5.401, Q1, Rank: 6/76 in Chemistry, Analytical)
36. S. R. Mogali, **W. Y. Yeong**, J. H. K. Tan, G. J. S. Tan, P. H. Abrahams, N. Zary, N. Low-Beer & M. A. Ferenczi (2018), Evaluation by medical students of the educational value of multi-material and multi-coloured three dimensional (3D) printed model of the upper limb for anatomical education, *Anatomical Sciences Education* 11(1), 54-64 (Impact Factor: 3.198,Q1,Rank: 4/41, Education, Scientific Disciplines)
37. S. Agarwala, J. M. Lee, W. L. Ng, M. Layani, **W. Y. Yeong** & S. Magdassi (2018), A novel 3D bioprinted flexible and biocompatible hydrogel bioelectronic platform, *Biosensors and Bioelectronics* 102, 365-371. -(Impact factor: 7.78, Q1, rank: 6/73 in Biophysics)