

## KUA HARN WEI (Dr)

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*PhD (Building Technology) MIT, MSc (Theoretical Physics) NUS, Dual Masters (Technology & Policy; Civil & Environmental Engineering) MIT, BSc (Physics, 2<sup>nd</sup> Upper Hons) NUS*



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### **CURRICULUM VITAE**

#### **ACADEMIC QUALIFICATIONS:**

- PhD (building technology), MIT, 2006
- Dual Masters (Civil & Environmental Engineering, and Technology & Policy), MIT, 2002
- Master of Science (by research), Theoretical Physics, National University of Singapore, 1999

#### **EMPLOYMENT RECORD:**

- Associate Professor, NUS (2014 - present)
- Assistant Professor, NUS (2006 - 2014)
- Senior Tutor, NUS (2000 - 2006)
- Teaching Assistant, NUS (1999-2000)

#### **ADMINISTRATIVE LEADERSHIP:**

- Vice Dean (Alumni Relations), 2022 – 2024
- Master, Kent Ridge Hall, 2021 – present
- Assistant Dean (Academic), 2016 – 2021
- Thrust Lead, Additive Manufacturing-enabled Design and Environment, AM.NUS, 2019 – present
- Leader, Smart Materials Laboratory, Department of Building, 2015 – present
- Deputy Head (Research), 2013 – 2016

#### **PROFESSIONAL/CONSULTING ACTIVITIES:**

- 9 leadership and key membership positions in academic societies and organizations. The most recent ones are:
  - Board Vice Chair, International Biochar Initiative, 2024 – present
  - Key member, Circularity Assessment Framework International Advisory Group – for the project entitled "Accelerating Sustainability through Circularity in the Buildings and Construction Sector and Supporting developing and emerging economies for implementation". 2024 – present.
- Membership in 8 academic journals, including
  - Editorial Advisory Board member, Cleaner and Responsible Consumption, 2020 – present
  - Associate Editor, Energy & Environment, SAGE Publishing, 2017-present
  - Associate Editor, Critical Reviews in Environmental Science & Technology, 2021 – 2022; Editorial board member, 2022 – present

- Associate Editor, Biochar-X, 2024 – present
- 116 speeches worldwide, including
  - Keynote speech, WASCON2023, 13-16 December 2023, Hong Kong. This is organized by the International Society for the Environmental and Technical Implications of Construction with Alternative Materials, Department of Civil and Environmental Engineering and Research Centre for Resources Engineering towards Carbon Neutrality of Hong Kong Polytechnic University.
  - Plenary speech, 23<sup>rd</sup> Asia Cementrade Summit, 23-24 April 2024, Manila, Philippines.
  - Plenary speech, International Biochar Initiative Global Biochar Exchange + Field Day, 22-25 April 2025 Nagoya, Japan.
  - Visit and invited speech, Guangzhou Institute of Energy Conversion, Guangzhou Academy of Sciences, 15-17 April 2025, Guangzhou, China. Fully sponsored. About 30 attendees
  - Invited speech, “How much can mesopores/macropores of biochar help in CO2 capture?”, University of Edinburgh, 25 February 2026.
- Contributed to about 50 conferences in various capacities; the major ones are shown below:
  - Overall Co-Chair, 12<sup>th</sup> International Conference on Industrial Ecology (ISIE2025) of the International Society for Industrial Ecology (ISIE). <https://isie2025.sg/>
  - Co-Chair, Scientific Committee, 2<sup>nd</sup> International Conference on Biochar Research and Application and 7th Asia Pacific Biochar Conference (ICBRA & APBC 2024), 20-22 September 2024, Shenyang, Liaoning, China <https://biochar2024.casconf.cn/>
  - Member, Scientific Committee, International Conference on the Practical Zero Emissions Technologies and Strategies (PZETS 2025), organized by the Australasian Practical Zero Emissions Society APZES and hosted by Fudan University. 8-11 December 2025, Shanghai, China

#### **UNDERGRADUATE TEACHING:**

- PF2504 Materials Technology
- PF4502 Green Development
- GES1019 Managing Singapore's Built Environment

#### **RESEARCH INTERESTS:**

- Upcycling and valorization of biological waste into high performance smart building materials to promote sustainability, resilience and health of building users.
- Sustainability assessment of building materials and systems (with a focus on life cycle sustainability assessment and urban metabolism).

#### **SELECTED PUBLICATIONS (more than 150 academic publications to date):**

- Kua H. W.\*, 2026. Ascertaining the role of mesopores and macropores in capturing carbon dioxide in multi-hierarchical biochar sorbent: a theoretical and experimental approach. *Biochar*, 8(1), p.33.
- Kua, H.W.\*, Goel, A. and Teo, J.H.J., 2025. Carbon mineralization, microstructure development and mechanical properties of limestone calcined clay cement enhanced with rice husk ash and biochar (bio-LC3). *Journal of Cleaner Production*, 520, p.146091.
- Kua, H.W.\* and Tan, S.M.H., 2023. Novel typology of accelerated carbonation curing: using dry and pre-soaked biochar to tune carbon capture and mechanical properties of cementitious mortar. *Biochar*, 5(1), p.36.
- Gupta, S., Muthukrishnan, S., and Kua, H.W.\*, 2021. Comparing influence of inert biochar and silica rich biochar on cement mortar–Hydration kinetics and durability under chloride and sulfate environment. *Construction and Building Materials*, 268, p.121142.

- Muthukrishnan, S., Gupta, S. and Kua, H.W.\*, 2019. Application of rice husk biochar and thermally treated low silica rice husk ash to improve physical properties of cement mortar. Theoretical and applied fracture mechanics, 104, p.102376.

\*: refers to corresponding authorship

#### **AWARDS:**

- A total of more than 80 local or international research-, teaching- and community service-related awards and honors, including
    - Winner, Engineers in Society Award 2025, category of "Sustainability and Climate Change". Awarded by the Institution of Engineering and Technology, UK.
    - Identified by Stanford University as among the top 2% scientists in the world for single-year or/and career analysis for 2019-2025)
    - Top prize in "Capturing Greenhouse Gas Removal" Image Competition Jury award 2024. Awarded by Oxford University's Smith School of Enterprise & the Environment, and the UK CO2RE program
    - Von Klitzing International Engineering Award 2022 (award was established in honor of the lifetime achievement of 1985 physics Nobel laureate Klaus Von Klitzing)
    - NUS Annual Teaching Excellence Award, 2011/2012 and 2013/2014
    - SDE Teaching Award, 2010/2011, 2011/2012, 2012/2013, 2013/2014, 2014/2015, 2015/2016, 2016/2017, 2017/2018
    - SDE Teaching Excellence Award Honor Roll 2018, School of Design & Environment, National University of Singapore
    - Bellagio Centre Academic Writing Residence fellow, Rockefeller Foundation, 2014
    - Fellow, Brown International Advanced Research Institute, Brown University, 2012
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