

May 21, 2020 [Features](#) By [Kamila Navarro](#)

Asia's Rising Scientists: Ho Ghim Wei

To meet the world's rising energy demands, Associate Professor Ho Ghim Wei is leveraging solar technologies for a brighter and more sustainable future.



Ho Ghim Wei

Associate Professor

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Singapore



AsianScientist (May 21, 2020) – Last April 22, Singapore celebrated Earth Day in the most serendipitous way yet: by meeting its 2020 solar target of 350 megawatt-peak (MWp). According to the Energy Market Authority and JTC Corporation, such an amount is enough to power 60,000 households a year.

With this milestone, Singapore is right on track to achieving 2GWp of installed solar capacity by 2030. Though 95 percent of the nation's electricity is still generated using natural gas—the cleanest form of fossil fuel—solar energy is widely acknowledged as the most viable renewable energy source in sunny Singapore.

As interest in solar energy picks up, Associate Professor Ho Ghim Wei of the National University of Singapore (NUS) is assiduously working to design sustainable, smart, solar systems—incidentally also the name of her laboratory at NUS. Integrating concepts from chemical and electrical engineering, materials science and physics, Ho and her group aim to harness the unique properties of nanomaterials to produce energy in a renewable way.

For her contributions to renewable energy research, Ho was awarded the L'Oreal-UNESCO For Women in Science National Fellowship in 2014 and recognized as the Singapore finalist for the ASEAN-US Science Prize for Women in 2016. In this interview with *Asian Scientist Magazine*, Ho recounts how an early interest in science led her to pursue an exciting academic career in a field with monumental significance.

1. How would you summarize your research in a tweet?

I've always been intrigued by sustainable solar technologies. This explains why I am interested in the photon and thermal energy conversion of functional nanomaterials for energy and environmental sustainability.

2. Describe a completed research project that you are proudest of.

We have developed a solar thermal nanocomposite endowed that utilizes light to speed up, or catalyze chemical reactions, as well as produce heat for efficient seawater desalination. Having solar thermal nanocomposites directly dispersed in seawater leads to instant chemical reaction initiation and steam

generation. The localized photoheating allows for the fine control of heat generation in contrast to uncontrollable and energy-intensive bulk heating. Our nanocomposite enhances catalytic clean hydrogen production largely in the visible-near infrared spectrum.



Associate Professor Ho Ghim Wei with her Sustainable Smart Solar Systems (S4) Laboratory group at the National University of Singapore. Credit: Ho Ghim Wei

3. What do you hope to accomplish with your research in the next decade?

My dream is to eventually bring affordable and low-carbon or carbon-free solutions to needy and remote regions in an effort to meet increasing demand for integrated sustainable energy-environment-water technologies.

4. Who (or what) motivated you to go into your field of study?

My dad is a structural engineer. In the early days, he brought me to his construction sites and introduced us to his projects and the wonders of science and engineering. Though he never told me what to study or which career path to choose—it was simply his enthusiasm for science, engineering and technology that made me love it too.

During my Masters, I was strongly encouraged by my supervisor to do further studies. After successfully synthesizing carbon nanotubes, I became excited about doing materials science research, particularly practical research focusing on renewable power alternatives. This keeps me going as I know that I am seeking solutions for an important issue that will surely benefit society.

5. What is the biggest adversity that you experienced in your research?

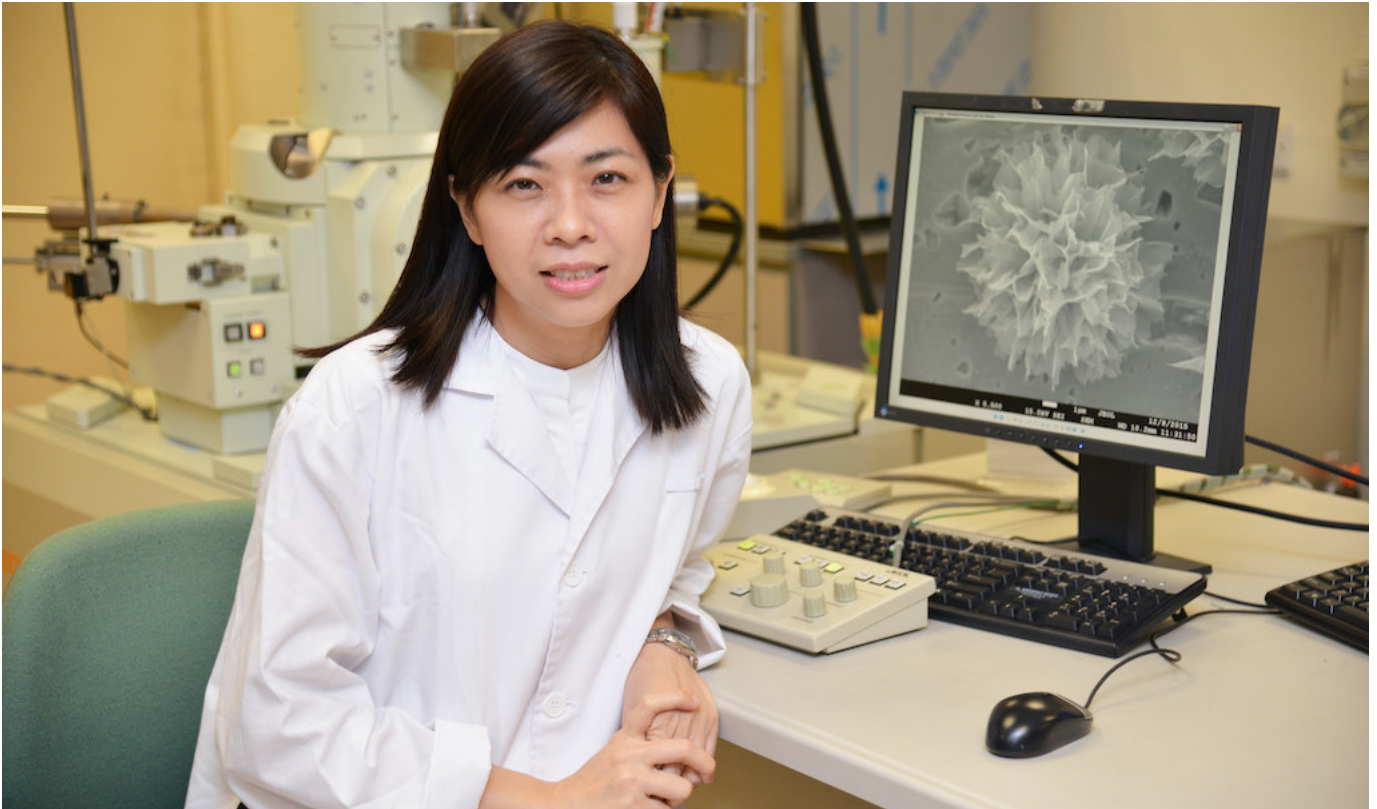
The biggest adversity is striking a work-life balance. I am often torn between research and managing family responsibilities. I feel the imbalance amidst my busy research schedule, which includes writing and editing manuscripts, supervising students and staff, setting up lab facilities, creating progress reports etc. I've had to remind myself to set manageable workloads and aim to meet priorities to not spiral into an eternal state of “busyness.”

6. What are the biggest challenges facing the academic research community today, and how can we fix them?

Academics are constantly pressured to secure funds against a competitive backdrop. To increase your chances of success, start by preparing the proposal early. This will give you time to conceive exciting ideas, get feedback and polish the writing. Avoid being too ambitious in the scope of the proposed research given the limited time and resources. Lastly, do not take rejection personally but see it as an opportunity to further refine your proposal.

7. If you had not become a scientist, what would you have become instead?

I would have become a farmer growing ornamental plants, or perhaps a landscaper designing functional, beautiful and relaxing outdoor spaces for my clients.



Associate Professor Ho Ghim Wei in her laboratory. Credit: Ho Ghim Wei

8. What do you do outside of work to relax? Do you have any interests and hobbies?

Gardening is my hobby. It brings me in touch with the astounding creations of God. I derive great pleasure and satisfaction when my plants are blooming and fruiting. For me, gardening is not just a recreational activity, but also a therapeutic environment to de-stress and be in awe of nature. I also get my kids involved, making it the perfect outdoor activity for family bonding and for them to learn to appreciate nature.

9. If you had the power and resources to eradicate any world problem using your research, which one would you solve?

Undoubtedly, climate change is the most pressing global challenge with long-term ramifications on the sustainability of mankind. If nothing is done, the dangerously irreversible change to our ecosystem will put the entirety of humanity at risk.

10. **What advice would you give to aspiring researchers in Asia?**

Success is built upon failures. The relentless attempt to overcome failures will eventually bring you to your desired dreams and goals.

This article is from a monthly series called Asia's Rising Scientists. Click [here](#) to read other articles in the series.

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