

A BIOENGINEER'S PERSPECTIVE ON FUTURE FOOD

BY DR. WEN WANG

Date: 3rd February 2017 (Friday)

Time: 12 – 1pm

Host: Prof. Zhou Weibiao

Venue: Seminar Room S16-03-07

Abstract

What will we be eating in 20 years' time? How will material science and biotechnology impact our dining table? In this seminar, I hope to share a bioengineer's perspective on future food design, in terms of shape, nutrition, texture, and interactivity. Specifically, three projects will be presented – 'bioLogic', 'Transformative Appetite' and 'Inflated Appetite', where food materials are innovatively re-fabricated into novel forms to enhance human well-being. In bioLogic, we used *Bacillus subtilis* – the bacteria traditionally for producing fermented *natto* soybeans in Japan – to synthesize multi-functional bio-hybrid films that respond to humidity changes. In this project, bio-design was enabled through the bioengineering approach, which motivated our team to rethink food from a new angle. In Transformative Appetite, we proposed an innovative strategy to avoid shipping air in food packaging. By utilizing anisotropic hydration, we produced foods that can be shipped in 2D format for compactness and autonomously folded into pre-customized 3D shapes upon cooking. This work enriched the dining experience and enabled food customization. In Inflated Appetite, we applied the knowledge of fermentation technology and makerspace to enhance food nutrition and create novel food form. Lastly, issues of food transparency and how chemistry research can be part of this new movement worldwide will be discussed.

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watch the video.



[Transformative Appetite](#)



[bioLogic](#)



[Making of bioLogic](#)

About the speaker



Dr. Wen Wang is a bioengineer, entrepreneur, designer and food enthusiast. Her research focuses on bio-fabrication and bio-manufacturing, involving interdisciplinary studies that combine the knowledge of biotechnology, advanced materials, food science and design. Her vision is to fill the gap between research and the real-world applications, by developing easy-to-access technologies, and more affordable products. She has been working on numerous research and commercial projects with multinational companies (New Balance, Saudi Aramco, Colgate, Target, etc.), for instance, therapeutic proteins for cancer therapy, sustainable biofuels from waste, bio-desulfurization of diesel, and future healthcare and household products using biological living materials. Her recent research focuses on innovative food materials, especially shape changing food for saving shipping space and enriching dining experience. She is

also working closely with Food + Future, an accelerator in Cambridge, MA, for process development to improve food transparency. Her work have been well recognized by mainstream media (Discovery, CCTV, wired UK), published in top journals (JACS, ACM-CHI), and displayed at high-profile exhibitions (Center Pompidou, Ars Electronica).

Dr. Wang is currently a research scientist at Massachusetts Institute of Technology (MIT) Media Lab, before which she did her postdoc at MIT Chemical Engineering Department after she gained her PhD degree in Singapore-MIT Alliance, Chemical and Pharmaceutical Engineering Program. Her bachelor's degrees were obtained from Zhejiang University in both Bioengineering and Intensive Training Program of Innovation and Entrepreneurship.