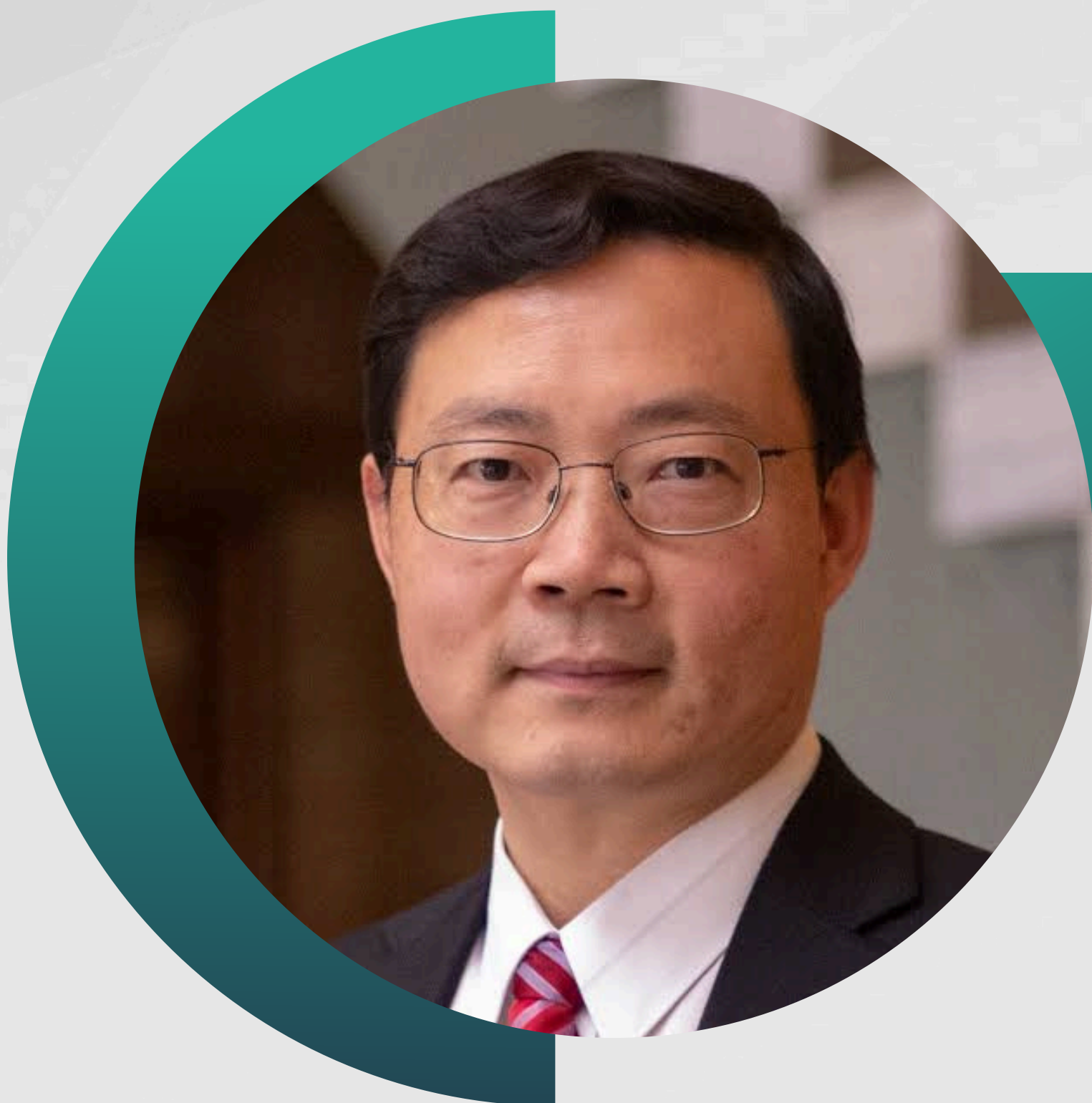


UNIVERSITY OF CALIFORNIA, IRVINE

DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING

IS PROUD TO HOST A SEMINAR BY

“WHAT ONE MATERIAL CAN DO”



JUNQIAO WU

**PROFESSOR & CHAIR
DEPARTMENT OF MATERIALS SCIENCE
AND ENGINEERING
UNIVERSITY OF CALIFORNIA BERKELEY,**

Thursday, March 13, 2025

2:00 PM - 3:20 PM

McDonnell Douglas Engineering Auditorium

Abstract: Vanadium dioxide undergoes a metal-insulator phase transition at 67 degree C. The two phases differ drastically in electrical and optical/dielectric properties. Using this one material and its doped phases, we have uncovered new physics in correlated electron behavior, and developed new applications ranging from regulation of thermal radiation to simulation of neural plasticity. In this talk, I will give an overview of our recent work on these topics.

References

- [1] Retarded ion diffusion by super-susceptibility (Nature Commun, 15, 5814 (2024))
- [2] VO₂ MIT obeys classical nucleation theory (Phys. Rev. Lett., 129, 245701 (2022))
- [3] Anomalously low electronic thermal conductivity (Science, 355, 371 (2017); Phys Rev. B 102, 041120 (2020))
- [4] Temperature adaptive radiative coating (Science, 374, 1504(2021); Joule, 7, 2552 (2023))
- [5] Emissivity engineering and application (Adv. Mater., 1907071 (2020); Science Advances, 6, eabd8688 (2020))

Bio: Professor Junqiao Wu received a B.S. from Fudan University and a M.S. from Peking University, China. He obtained a Ph.D. degree from the University of California, Berkeley for work on semiconductors. He did postdoctoral research at Harvard University, and then began his faculty appointment in the Department of Materials Science and Engineering at the University of California, Berkeley. His honors include the 29th Ross N. Tucker Memorial Award, the US-NSF Career Award, the US-DOE Early Career Award, the Presidential Early Career Award for Scientists and Engineers (PECASE) from the White House, the Bakar Prize, elected Fellow of the American Physical Society (APS), and the FMD John Bardeen Award from the Minerals, Metals and Materials Society (TMS).

He is currently the Chair of the Department of Materials Science and Engineering at UC Berkeley, and holds joint appointment at the Lawrence Berkeley National Laboratory. He also serves on the Chair Line of the Division of Materials Physics of the American Physical Society (APS). The Wu group explores physics and applications of functional and electronic materials. For more information, please visit wu.mse.berkeley.edu.

