

PHYSICAL CHEMISTRY SEMINAR



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Board Member of Nanostring (NSTG), Lumicks, B.V., & Intuitive Surgical (ISRG)

Monday, May 18, 2020

4:00 PM

2033 Young Hall

“Cryo-Electron Microscopy: The Science and Business of a Revolution”



Cryo-Electron Microscopy (Cryo-EM) has revolutionized the measurement of the 3-dimensional atomic structure of complex macro-molecules. The convergence of the advancement of several technologies transformed cryo-EM from a fringe technique to one that is displacing the former established technique, x-ray crystallography. In 2017, the Nobel Prize in Chemistry was awarded to Jacques Dubochet, Joachim Frank, and Richard Henderson for developing cryo-electron microscopy for the high-resolution structure determination of biomolecules in solution.

In parallel with the academic developments, the technique was commercialized. This allowed many researchers to accelerate development of the technique and technology ultimately producing important insights into the fundamental chemistry of life. A scientific success. It was also a commercial success. More than several billion dollars of value was created in the process.

I will attempt to describe interplay between the academic and commercial development of the tools, techniques and the exciting insights into the machinery of life that resulted. Finally, I'll comment on a push to “democratize” the technique where academia is taking the lead.