

# University of Houston - Biomedical Engineering Seminar

Friday, Feb. 5, 2021, 12 noon

Via Zoom: <https://uofh.zoom.us/j/92470065206>

## Biological Insights from Physical Properties



**William H. Grover, Ph.D.**

### Abstract

Around 250 B.C., Archimedes measured the density of a king's crown to determine if the crown was made of pure gold. Over 2000 years later, measurements of density and other physical properties can still provide valuable insights into the state and composition of an object. In this talk I will share my lab's progress in developing simple and low-cost tools for precisely measuring the physical properties (like mass, volume, and density) of small biological samples. Using these tools, we can identify counterfeit or adulterated medications, measure the dissolution rates of single controlled-release drug particles, sort different types of cells, assess the purity and authenticity of food products, observe how organisms react to toxicant exposure, monitor the efficacy of treatments for traumatic brain injury, measure the degradation rates of biodegradable materials, and much more.

### Abstract

William H. Grover is an Associate Professor in the Department of Bioengineering at the University of California, Riverside. His research lab develops a wide range of simple and low-cost solutions to human health challenges, from musical instruments that can detect counterfeit drugs, to computers that run on air instead of electricity. Grover obtained his postdoctoral training in the Biological Engineering Division at Massachusetts Institute of Technology, where he made the first precision measurements of the density of single living cells. He obtained his Ph.D. in Chemistry at the University of California, Berkeley, where he developed the first microfluidic valves suitable for large-scale use in glass microfluidic devices. Outside of the lab, Dr. Grover enjoys investigating predatory journals and other types of fraud targeting academia.