

## **Autonomous Materials Research and Discovery at NIST**

*Wednesday, 21 September 2022 16:30 (45 minutes)*

The last few decades have seen significant advancements in materials research tools, allowing scientists to rapidly synthesis and characterize large numbers of samples - a major step toward high-throughput materials discovery. Autonomous research systems take the next step, placing synthesis and characterization under control of machine learning. For such systems, machine learning controls experiment design, execution, and analysis, thus accelerating knowledge capture while also reducing the burden on experts. Furthermore, physical knowledge can be built into the machine learning, reducing the expertise needed by users, with the promise of eventually democratizing science. In this talk I will discuss autonomous systems being developed at NIST with a particular focus on autonomous control over user facility measurement systems for materials characterization, exploration and discovery.

**Presenter:** Prof. KUSNE, Aaron Gilad (NIST)

**Session Classification:** Nano and Material Science