

California State University, Northridge – Mechanical Engineering Department

TANMS Community College Students Research Project

Summer 2013

The goal of this research project is to train students on the characterization of ferroelectric and ferromagnetic materials. During the summer, the students will learn how to build a Sawyer-Tower circuit to measure the polarization-electric field hysteresis loop (P-E) of potassium nitrite films. The students will also build an integrating magnetometer to measure magnetization-magnetic field hysteresis loop (M-H) of common ferromagnetic materials. In first three weeks, the students will learn the principles of ferroelectric and ferromagnetic materials and the basic methods of characterization. In the remaining seven weeks, the students will design, fabricate and demonstrate a cantilever beam magnetometer to measure the magnetization and magnetostriction. The students will learn system level skills such as integration and interface between optical-electrical-magnetic components.

The students will work with CSUN undergraduate students and under the mentorship of graduate student (Andres Chavez) in Professor Youssef's group.