



4th Annual Cal Poly Pomona Student RSCA Conference
March 4, 2016

University Library,

Oral Presentations from 12:45 to 5 pm

Bronco Student Center (Ursa Major),

Poster Session, Performance Presentation, and Reception from 4 to 6:30 pm

Lead Author: Gamer Margoosian

Major: Chemical Engineering

College: Engineering

Co-author(s): Not Applicable

Faculty Mentor(s): Dr. Vilupanur Ravi

Presentation Type: Oral Presentation

Project Title: Laboratory Simulation of Marine Corrosion of Metallic Alloys

Synopsis: A salt fog chamber was successfully setup with capabilities for simulating marine atmospheres in accordance with industry standards. Metallic alloys were exposed to this environment.

Abstract: There is an ongoing need in the marine industry for metals that withstand the harsh, salt-rich environment of sea water and air. Boron-containing titanium alloys were recently developed to improve the mechanical properties of titanium alloys. However, the corrosion behavior of these new alloys in marine environments is not fully understood. In this project, the effect of boron on the corrosion performance of titanium alloys is being studied. The boron contents of these titanium alloys range from <0.001 to 1.09 wt% boron. The alloys are ground to an 800 grit finish using standard metallographic procedures. The salt fog chamber has been setup and will be utilized according to the ASTM B117 standard. The alloys will be tested at 35°C in an environment of salt fog containing 5 wt% NaCl for a duration of 1 week, 2 weeks, and 3 weeks. The alloys will be placed at an angle between 15 and 30 degrees from the vertical. Photographs and mass measurements of the alloys will be taken before and after testing to evaluate the corrosion damage (if any). The extent of corrosion of the alloys will be determined by visual inspection of the surfaces as well as comparisons of mass loss.