

Oakland University student uses alternative method to evaluate effect of corrosion on material properties

The Oakland University and School of Engineering and Computer Science communities are invited to attend Bernard Sia's defense of his Ph.D. dissertation. Seating is limited. RSVP with Katie Loodeen at loodeen@oakland.edu.

CORROSION ASSESSMENT OF MATERIALS USING 3-DIMENSIONAL DIGITAL IMAGE CORRELATION SYSTEM

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Corrosion deteriorates a material through chemical reaction between it and its environment. While these techniques provide a good measurement of corrosion on an object, they do not provide a direct measurement of the effect of corrosion on the properties of a material. Stress and strain data is needed to assess the change in material properties due to corrosion. This Ph.D dissertation uses a 3-D DIC system to examine the relationship between exposure time in a corrosive environment and the elastic, plastic and strain hardening properties of a material. This setup, oriented at an angle to the specimen, enables both cameras to image multiple sides of the specimen simultaneously as the test specimen is under load, providing a more direct measurement of in-plane and out-of-plane deformation and strains than what is provided by traditional 3-D DIC setups. This setup is used to evaluate the elastic, plastic, and strain hardening properties of materials before and after exposure to a corrosive environment to assess the changes that occur in these properties as a result of exposure to a corrosive environment.

Time: 10:00am-12:00 pm
Date: Thursday, May 31, 2018
Location: 347 EC

