# MECHANICAL & MATERIAL COLLOQUIUM

## Chemistry Meets Engineering: Developing Inorganic Phosphate-Based Anticorrosive Systems for Mild Steel Protection

*by Vadym Drozd (Florida International University)*

Protective coatings are the most widely used and cost-effective method to control corrosion. There is strong demand for anti-corrosion, thermally resistant, and durable coatings from aerospace, oil and gas, construction, and automotive as well as many other industries. Protective coatings have been the primary resource in the battle against corrosion for several decades. But even state-of-the-art coatings suffer from serious disadvantages. Most of them are based on urethane, epoxy, acrylic and other organic resins and contain high loadings of volatile organic compounds (VOC), which are often flammable and have adverse health or environment effects. These coatings have high requirements for substrate surface preparation quality. They suffer from degradation under UV light and have low stability in organic solvents. The technology we are developing is a true breakthrough in performance, but it is also a breakthrough in safety and sustainability, it has no toxins, no VOC's and no hazardous chemicals of any kind. This is two-component water-borne spray applied industrial coating system that prevents corrosion on a carbon steel. Recent developments, use and characterization of these inorganic phosphate-based anticorrosive systems for mild steel protection will be discussed together with the mechanisms of anti-corrosive protection.

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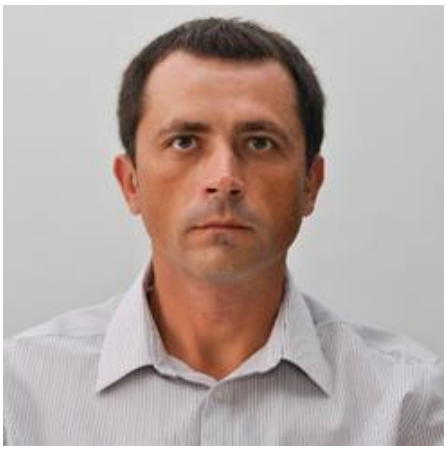

Dr. Vadym Drozd received his PhD from Taras Shevchenko University of Kyiv, Ukraine. He was a postdoctoral research fellow at National Taiwan University, currently he is a Research Associate at Florida International University. He is interested in the clean energy generation methods and energy storage devices, behavior of materials at extreme conditions of high pressure and temperature, anticorrosion coating. He is author of more than 120 scientific publication, books chapters and patents.

**Place:**
**EC 1114**

**Time:**
**2:00-3:15 PM**
**Nov. 26, 2024**

*https://mme.fiu.edu/seminar-schedule*

*For questions, comments and suggestions, contact Colloquium Organizers Dr. Benjamin Boesl (bboesl@fiu.edu) or Dr. Jiuhua Chen (chenj@fiu.edu)*