Environmentally Safe Aircraft Coatings

Dr. James O. Stoffer

Curators' Distinguished Professor Emeritus of Chemistry and Past Director, Graduate Center for Materials

10th Stoffer Lecture

3:00 p.m.
Friday
Oct 3rd in
B-10
Bertelsmeyer Hall

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Abstract: In 1992, he started working with Dr. O'Keefe on research to find a replacement for chromium as the corrosion inhibitor for aluminum. Hexavalent Chromium is toxic and must be removed from the workplace and in/on products of commerce. Presently, Aluminum used on aircraft must have a chrome conversion coating which will survive 336 hours in a salt fog test and when a coating is applied over it and scribed down to bare metal, provide 2000 hours corrosion protection in salt fog tests. Our cerium conversion coatings do pass both "mil specs" tests. A patent has just been granted for this process. This has had a major impact on the aircraft industry since the Federal Government spends over a billion dollars each year just painting and repainting aircraft, mostly related to corrosion protection. We have developed a non-chrom primer that essentially removed most of the chrom from aircraft coatings. This technology also has been patented by the University and licensed to Deft Inc. It is now being used by the military for almost all aircraft. Context is not fixed.

About the speaker: James Stoffer is Curators' Distinguished Professor Emeritus of Chemistry and past director of the Graduate Center for Materials Research. He taught many courses in the chemistry department including Freshman Chemistry, Organic Chemistry and Polymer Chemistry. Additionally his experience includes teaching paint short courses in Rolla for over 30 years, as well as at the National Paint Show and at the American Chemical Society meeting each year. He has advised over 50 graduate students and research with these students includes the first papers on microemulsion polymerization processes, one of the first papers on polymerization of liquid crystals, the first papers on ultrasonic dispersion of pigments for paints, on ultrasonically initiated and microwave initiated free radical catalyzed polymerizations, and on transparent composites. Most of his research deals with the preparations and properties of coatings and polymers. He has sought to develop a replacement for chromium as the corrosion inhibitor for aluminum of aircraft since 1992, in collaboration with Dr. Tom O'Keefe and his group. Dr. Stoffer published over 150 publications and authored 12 patents, one of which provides royalties to fund this lecture.

Dr. Stoffer has been active in the Rolla area, serving on the Rolla Public works board for 32 years, and 10 years as its president. During this time, the entire utility system has been modernized. He has also been active in his local church, starting Kid-kare of Rolla, an after-school program with some 30 to 40 kids who were failing in classes, being helped with math and reading, finally being able to pass their classes at school.