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## Advanced protection and evaluation techniques against corrosion

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Corrosion is an unavoidable scenario, which leads to widespread of losses and dangers if not properly protected. Every country faces heavy economic losses due to corrosion everyday irrespective of the level of development of the country and their geographical location. With more industrial advances in the world together with atmospheric changes, there are more challenges to overcome in corrosion protection strategy development. Proof of durability for long term protection under harsh environment is necessary. Need for novel advanced corrosion protection strategies such as smart coatings with self-healing capabilities became inevitable with more environmental regulations being adopted such as the ban of chromate conversion coating. Another major demand from end users from various industrial sectors is the requirement for multifunctional properties to supply the same coating system such as esthetic necessities, fire retardant properties, etc. without compromising corrosion protection attributes. This becomes even more challenging as productivity has also become one strong demand. Thus, to provide productive coating systems with outstanding corrosion protection properties to prove long lasting protection even under harsh environmental and service conditions together with multifunctional properties is the key to success in this area. On the other hand, it is very important to use proper corrosion characterization techniques and methods to evaluate the performance of these coatings. These challenges and a review on current advanced coating systems will be presented in this talk. Recent developments in advanced zinc rich coatings and sol-gel coatings will also be discussed. Some insight into advanced corrosion and electrochemical characterization techniques to evaluate these coatings will also be presented.

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