

# Smart self-healing coating for the corrosion protection of magnesium alloys: a brief review

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## **ABSTRACT**

The combination of excellent physical qualities and biocompatibility has made magnesium (Mg) alloys a viable light alloy, particularly for automotive, aerospace, and pharmaceutical applications. However, in most environments, Mg alloys are easily corroded, thus preventing their extensive use. Surface protection by coating is an affordable method for preventing corrosive media from contacting Mg substrate. The development of smart self-healing coatings has attracted attention for surface coating of Mg alloys, as it can impede corrosion reactions, repair mechanical damage, and enable the substrate to function normally again. This article briefly reviews the promising approach of smart self-healing coatings, state-of-the-art coatings, and various healing agent encapsulations. Polymerizable healing agents or corrosion inhibitors are encapsulated in containers and embedded in the coating matrices to facilitate autonomous healing mechanisms. This brief explanation and review are expected to give an insight and more opportunities to explore newly designed smart self-healing coatings.

## **KEYWORDS**

Self-healing, Smart coating, Corrosion, Magnesium

**ACKNOWLEDGMENT**

The authors wish to acknowledge the financial support for research grants from the Ministry of Higher Education, Malaysia (FRGS/1/2019/TK05/UMP/02/5) and the Universiti Malaysia Pahang (RDU210368) and (PGRS210373).