

Carbohydrate polymers protecting metals in aggressive environments

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Abstract

The biopolymers and polysaccharides which are naturally present or are a product of some biochemical process are abundant in nature. With proper planning and management, they are non-toxic as well as inexhaustible natural source of incredibly interesting compounds. Using carbohydrate polymers is not a novel phenomenon for the industries; they have already been employed as binders, coatings, drug carriers and most interestingly as corrosion inhibitors in various media. Innumerable researches have been carried out and reviewed in the past two decades on their use. What makes these incredible substances so sought after as corrosion inhibitors, what is the mode of their action and how efficient they are? This discussion describes the application of carbohydrate biopolymers and their more efficient derivatives for inhibition of corrosion of metals. The modes and mechanisms of how they fit in a corrosion reaction to protect the metal would also be described. Their efficiency which is directly related to their macromolecular weights, chemical structures and their interesting molecular and electronic orientations would be discussed. To judge their inhibition efficiency and mode of functionality their structures and compositions can be analysed by simple gravimetric analysis or a much more powerful analytical electrochemical and theoretical tools paint a better picture of the mechanism of actions involved in such a corrosion inhibition would be discussed in this chapter.



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Biography:

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