[0006] In addition, corrosion in an oilfield environment may be initiated at a specific location on a specific piece of equipment at a specific time. However, such information on where and when corrosion may start may not be available to technicians in the oil field. This delay allows for the corrosion to progress, resulting in greater damage to mechanical equipment in the field.

[0007] In view of the above, it would be desirable to have an improved delivery system that supplies a sufficient amount of corrosion inhibitor at specific locations in order to stop or contain the corrosion in its early stages. It would also be desirable to supply a corrosion inhibitor that would be successful in containing or preventing corrosion under the environments typical of producing oil wells.

SUMMARY

[0007a] In one aspect of the invention, there is provided a method of supplying a corrosion inhibitor to a metal, comprising:

impregnating a nanostructure carrier with a corrosion inhibitor to form a corrosion inhibitor / nanostructure carrier combination;

placing the corrosion inhibitor / nanostructure carrier combination adjacent to a metal component;

wherein the corrosion inhibitor / nanostructure carrier combination is capable of releasing the corrosion inhibitor.

[0007b] In another aspect, there is provided a method of supplying a corrosion inhibitor to a metal, comprising:

placing a corrosion inhibitor / nanostructure carrier combination adjacent to a metal;

wherein the corrosion inhibitor / nanostructure carrier combination is capable of releasing the corrosion inhibitor, and

wherein the corrosion inhibitor / nanostructure carrier is located within an elastomer.

[0007c] In another aspect, there is provided a corrosion inhibiting device comprising:

a carrier comprising a nanostructure, the carrier configured for at least partial embedment in a surface of a tool; and

a corrosion inhibitor impregnated in the carrier,

wherein the corrosion inhibitor is configured to be released into the environment adjacent the surface of the tool.

[0007d] In another aspect, there is provided a method of preventing corrosion, comprising:

combining a corrosion inhibitor with a nanostructure carrier;

containing the corrosion inhibitor and the nanostructure carrier within an elastomer; and

placing the elastomer containing the corrosion inhibitor adjacent to a surface subject to corrosion;

wherein the elastomer is permeable to the corrosion inhibitor and capable of releasing the corrosion inhibitor from the elastomer.

[0008] In an embodiment, a method of supplying a corrosion inhibitor to a metal comprises combining a corrosion inhibitor with a nanostructure carrier (the combination referred to herein as "a corrosion inhibitor / nanostructure carrier combination"). As used herein, the term "combine" or "combining" refers to the incorporation of two or more entities via any suitable interaction known to one skilled in the art. Such interaction includes and is not limited to adsorption (chemisorption and physisorption), chemical bonding, and electrostatic interaction.

[0009] In another embodiment, a method of supplying a corrosion inhibitor to a metal comprises placing a corrosion inhibitor / nanostructure carrier combination in the vicinity of a metal where it is capable of releasing a corrosion inhibitor. In some embodiments, the method further comprises attaching a corrosion inhibitor to a nanostructure carrier to form the corrosion inhibitor / nanostructure carrier combination. In some embodiments, the method further comprises releasing the corrosion inhibitor from the corrosion inhibitor / nanostructure carrier combination.

[0010] In a further embodiment, the corrosion inhibitor / nanostructure carrier combination is combined with a lubricant, an elastomer, a coating, placed within the matrix of a metallic surface, located within a solid encapsulated bearing, or combinations thereof.

[0011] In an embodiment, the corrosion inhibitor is released upon normal wear of the metallic surface, under standard operating conditions, and/or upon a triggering condition. In another embodiment, the corrosion inhibitor is released over time or upon a change in condition such as upon a change in pressure, temperature, or pH.

[0012] In yet a further embodiment, the corrosion inhibitor is located adjacent to an oilfield tool such as a drill bit, a rotor, a stator, a motor, a pump, a drive shaft assembly, a