

# Effect of the Hydrogen-Reductive Plasma on Marine Oxidized Iron Objects. Chaotic Plasma Configuration

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## 1 Abstract

The issue of the plasma influence while it is in contact with a solid surface, was set along with the pursuit of the thermonuclear fusion. This paper aims to answer the following question “How the high thermal plasma leans to the reactor’s wall without melting the metal?” Plasma reduction is one of desalination treatment methods of metal artifacts from the marine environment. At different temperatures of 80-300°C, pure hydrogen plasma was experimented as a desalination and passivation method. The results indicated that chlorides removal from the oxidized layers covering the metal artefacts depends on the state of the object, the temperature of plasma and the treatment’s duration. The iron objects resisted the re-rust after reducing the chloride ions by hydrogen plasma reduction lead to passivate the metal surface.