Electrochemical water treatment for scale removal

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Scaling remains a major problem for household devices or industrial applications, like water treatment, iron lifetimes … with large economical impacts. Usually the scale is due to the alkaline precipitation from hard water in the form of $CaCO_3$, for the calcium hardness, and in the form of $Mg(OH)_2$, for the magnesium hardness. This electrochemical precipitation is due to a high pH environment around the cathode created by the hydroxyl ions release**d** from the oxygen and water reduction reactions. Despite their potential, the use of electrochemical scale control methods is quite limited because of the lack of technical information about it. In this work are presented some experimental investigations to provide a better understanding about the electrochemical scale control process for water softening for ironing appliance**s**. For this, the electrochemical deposition of $CaCO_3$ scale was carried out in a modeled continuous flow system under controlled pH and potentials. Total current intensity and water flow rate effects on descaling and acidification were investigated.