O30. Impact of the substrate composition to the deposition process of the iron from highly alkaline suspensions

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Despite the rising demand for new materials, such as aluminium, plastics and carbon composites, iron and steel, plays a crucial role in the modern world. Though, the iron industry is one of the most CO2 producers in the modern world. Also, the production of iron requires a significant amount of carbon, which can be a problem in near future considering rising prices for fossil fuels. Therefore, breakthrough technologies are urgent and indispensable. One of the possible methods that can be used in future is the electrochemical deposition of the iron from oxide suspensions [1-2]. This method allows not only significantly decreases the amount of greenhouse gassed emissions, but also can be easily used in collaboration with renewable energy sources with flexible prices in different periods.

In the current work, we will present the influence of the substrate composition on the deposition process of the iron from highly alkaline suspensions. It was found that depending on the substrate material the potential or current during deposition can significantly differ in galvanostatic or potentiostatic mode respectively. Deposition of carbon substrates, namely graphite and glassy carbon has shown the least efficiency. At the same time, deposition nickel shows a current density up to two times higher. Deposition behaviour and comparison of the deposit properties will be discussed in the presentation. Feasibility and possible interests in industrial applications will be also discussed.

References

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