

## **Formation of $\text{CaCO}_3$ particle and conductivity of $\text{Na}_2\text{CO}_3$ and $\text{CaCl}_2$ solution under magnetic field on dynamic fluid system**

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### **Abstrak**

*Hard water causes the  $\text{CaCO}_3$  scale formation on the pipe walls and heat exchanger equipments in industrial or domestic water processes. A great number of experimental researches on the prevention of the  $\text{CaCO}_3$  precipitation process by magnetic field have been carried out. In this research,  $\text{Na}_2\text{CO}_3$  and  $\text{CaCl}_2$  solutions was magnetized in the circulated flow condition (dynamic fluid system). The velocity of fluid and the circulation time was modified to examine its influences to the magnetization process.  $\text{CaCO}_3$  content was measured by titration method of EDTA complexometry. Conductivity test was conducted to find out hydrate ion bonding.*

The results showed that magnetization increased the  $\text{CaCO}_3$  formation and the optimum process reaches for 10 minutes circulation on 0.554 m/s of flow rate. Magnetic field decreases the conductivities of  $\text{Na}_2\text{CO}_3$  and  $\text{CaCl}_2$  solution, hence reduced the ion hydrate bonding. These results showed that magnetization on  $\text{Na}_2\text{CO}_3$  and  $\text{CaCl}_2$  ionic solution was effective in controlling the  $\text{CaCO}_3$  formation by increasing  $\text{CaCO}_3$  precipitation.