

## Formation of CaCO<sub>3</sub> particle and conductivity of Na<sub>2</sub>CO<sub>3</sub> and CaCl<sub>2</sub> solution under magnetic field on dynamic fluid system

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### Abstrak

*Hard water causes the CaCO<sub>3</sub> 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 CaCO<sub>3</sub> precipitation process by magnetic field have been carried out. In this research, Na<sub>2</sub>CO<sub>3</sub> and CaCl<sub>2</sub> 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. CaCO<sub>3</sub> 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 CaCO<sub>3</sub> formation and the optimum process reaches for 10 minutes circulation on 0.554 m/s of flow rate. Magnetic field decreases the conductivities of Na<sub>2</sub>CO<sub>3</sub> and CaCl<sub>2</sub> solution, hence reduced the ion hydrate bonding. These results showed that magnetization on Na<sub>2</sub>CO<sub>3</sub> and CaCl<sub>2</sub> ionic solution was effective in controlling the CaCO<sub>3</sub> formation by increasing CaCO<sub>3</sub> precipitation.*