

Formation of CaCO₃ particle and conductivity of Na₂CO₃ and CaCl₂ solution under magnetic field on dynamic fluid system

Nelson Saksono, author

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Abstrak

Hard water causes the CaCO₃ 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 CaCO₃ precipitation process by magnetic field have been carried out. In this research, Na₂CO₃ and CaCl₂ 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. CaCO₃ 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 CaCO₃ formation and the optimum process reaches for 10 minutes circulation on 0.554 m/s of flow rate. Magnetic field decreases the conductivities of Na₂CO₃ and CaCl₂ solution, hence reduced the ion hydrate bonding. These results showed that magnetization on Na₂CO₃ and CaCl₂ ionic solution was effective in controlling the CaCO₃ formation by increasing CaCO₃ precipitation.