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

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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.