Pengaruh Medan Magnet terhadap Konduktivitas Larutan NaCO3 dan CaCl2 serta Presipitasi dan Morfologi Partikel CaCO3 pada Sistem Fluida Statis

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Abstrak

CaCO, scale formation on pipe walls and heat exchange equipments in industrial or domestic water processes is a serious problem. A great number of experimental researches on the prevention ofthe CaCO3 precipitation process by magnetic field have been carried out. The efforts to understand the effect of the magnetic field on the CaCO, precipitation are still being developed In this research, Na2CO, solution was magnetized by 5200 gauss permanent magnet before mired with CaCl2 in quescient condition (static fluid system). Magnetization time was variated to examine its influences to magnetization process. CaCO; content at solution and on deposit was measured by titration method of EDTA complexometry. Conductivity test was conducted to find out hydrate ion bonding. SEM (Scanning Electron Microscope) and XRD (X-Ray diffraction) rest were conducted to see the morphology of CaC O3 crystal deposit. The results showed that magnitization decreases CaCO; precipitation rate at initial precipitation (nucleation period and optimum process reaches for 30 minutes magnetization. The magnetic field depreses precipitation rate but has no eject on the equilibrium of the reaction. Magnetic field increases the conductivities of Na;C.`O_, and CaCl; solution hence reducing its ion hydrate diameter and reinforcing ion hydrate banding. SEM and XRD test results shows that CaCO, crystal formed was predominated by calcite type and magnetization depressed the number of CaCO, crystals and enlarge the crystal size. These results show that magnetization is efective in controlling the CaCO, deposit by supressing CaCO3 precipitation on deposit and in solution.