Pengaruh Kombinasi Proses Termal dan Agitasi Mekanik terhadap Presipitasi serta Morfologi Partikel CaCO3 dalam Air Sadah = The Effect of Combination between Thermal and Mechanical Agitation Processes to the Precipitation and Morphology of CaCO3 in Hardwater

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Abstrak

Penelitian ini berusaha menjawab seberapa signifikan pengaruh kombinasi proses termal dan agitasi mekanik dalam menurunkan kesadahan air. Kombinasi proses tersebut dilihat pengaruhnya terhadap proses presipitasi CaCO3 pada air sadah sintetis melalui penurunan kandungan ion Ca2+ dalam larutan dan dinyatakan dalam persen presipitasi CaCO3.
Hasil penelitian menunjukkan bahwa persen presipitasi CaCO3 meningkat seiring dengan penambahan kecepatan putar dan suhu larutan. Kombinasi kedua proses mampu mendorong presipitasi CaCO3 hingga mencapai 41% dengan kecepatan putar agitasi 1500 rpm pada suhu 50C. Disamping itu, kenaikan konduktivitas larutan NaHCO3 setelah diberi perlakuan, memperkuat dugaan bahwa kedua proses mampu memperlemah hidrat ion dan cluster air dalam larutan sehingga mampu mendorong presipitasi CaCO3.
.....This research trying to answer how significant the effect of combination between thermal and mechanical agitation in softening the hard water is. The influence of this method to the precipitation of CaCO3 was observed by measuring Ca2+ ions in the solution of synthetic hard water.
The result of this research shows that the percentage of CaCO3 presipitation increases as rotational speed of agitation and temperature increase. This method could accelerate the CaCO3 precipitation up to 41% when the synthetic hard water was agitated in 1500 rpm, 50C. Besides, the increasing conductivity of NaHCO3 solutions that had been given a treatment could be an indicator that agitation and thermal process weaken the ion hydrate and water cluster.