**Pembuatan Nanokatalis Cangkang Telur Bebek Terimpregnasi KOH**

(*Production KOH-Impregnated Duck Eggshell Nanocatalyst*)

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## *ABSTRACT*

*Duck eggshells are waste materials that are generally discarded without further processing. Converting duck eggshell waste into CaO heterogeneous catalysts is a promising approach for waste valorization. However, one of the main limitations of CaO catalysts is their high reactivity with components in the atmosphere, which can reduce their catalytic activity. Therefore, catalyst modification through the incorporation of other metals into CaO using the wet impregnation method is required to improve its stability and catalytic performance. Wet impregnation is a catalyst modification technique carried out by immersing or saturating a material in a solution containing specific active substances. This study aimed to analyze the effect of calcination temperature variation and the effect of impregnation using an 11% KOH solution on CaO nanocatalysts synthesized from duck eggshells. The calcination temperatures investigated were 800°C, 850°C, 900°C, and 950°C. The synthesized catalysts were characterized using Scanning Electron Microscopy (SEM) and Energy Dispersive X-ray (EDX) analyses. The results showed that increasing the calcination temperature significantly affected the calcination yield of duck eggshells. The sample calcined at 950°C exhibited the best morphology, characterized by high homogeneity, low agglomeration, and improved porosity. At 950°C, the decomposition reaction proceeded almost completely, resulting in a maximum CaO content of 100%. Furthermore, the wet impregnation method improved the surface characteristics and catalytic performance of the catalyst rather than increasing the amount of CaO formed during the calcination process.*

***Key words**: calcium oxide, duck eggshell, impregnation, nanocatalysts.*