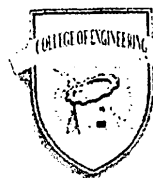




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**DESIGN, FABRICATION, AND EVALUATION OF DOWNDRAFT KILN
FOR THE PRODUCTION OF LIME FROM SLIPPER-CUPPED OYSTER
(*Crassostrea iredalei*, Faustino 1932) SHELLS**

A Project Study Report Presented
to the Faculty of College of Engineering
Central Philippine University
Jaro, Iloilo City

In Partial Fulfillment
of the Requirements for the Degree
BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

By

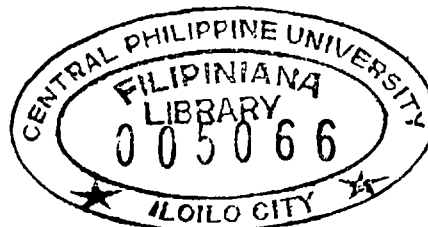
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**Bilan, Renan P.; Janolino, Jerilyn J.; Loraña Jerlen P.;
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ABSTRACT

Slipper-cupped oyster shell contains 95% calcium carbonate and is considered as a promising source of lime in the future. This study aimed to design, fabricate, and evaluate a downdraft kiln to produce lime from Slipper-cupped oyster shells. Three kilograms of shells were calcined at 200 °C for 30, 60, and 90 minutes, respectively, with 50 °C increment up to 500 °C which was the highest temperature the kiln had withstood. Calcined shells were powdered using LA Abrasion equipment for 150 seconds and the products obtained were characterized by particle size distribution using the Standard Tyler Sieve and calcium oxide content analysis conducted by the Regional Feed Laboratory. The results for particle size distribution showed that at temperature of 300 °C and residence time of 60 minutes, particle sizes smaller than 0.3 mm is 55.66 percent of the total mass which is greater compared to other trials.

The results for percent calcium oxide (CaO) showed that the optimum operating temperature and residence time of the downdraft kiln in calcining Slipper-cupped oyster shell must be at a temperature of 400 °C and residence time of thirty (30) minutes to produce 54.726 % CaO can be considered already a very high-quality lime. Percent CaO of other trials is also greater than 50% and can also be categorized as high-quality lime.