

**Research Title**                      **Fly Ash Glaze for Pottery**

**Author**                                **Ms. Raweewan Chanchariyakul**

**M.S.**                                    **Teaching Chemistry**

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<b>Assoc. Prof. Dr. Kanchana</b>	<b>Keowkamnerd</b>	<b>Chairman</b>
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<b>Assist. Prof. Dr. Nitat</b>	<b>Jira-Arun</b>	<b>Member</b>

**Abstract**

Fly ash from lignite was studied as a component of glaze for stoneware products. The composition by weight of the glaze was as follows : Fly ash 30-60 %, feldspar 20-50 % and Lampang clay 10-40 %. The fly ash glaze could be used with many bodies consisting of ball clay mixed with kaolin or Hang-Dong clay mixed with compound clay in the proportion of 65-95 % by weight, together with feldspar mixed with Lampang stone or quartz in the weight range 5-35 %. A suitable temperature range for the glaze firing process was 1260-1280°C. Firing in an oxidation atmosphere gave a matt glaze, the color varying from yellow-brown, brown, dark brown to black. Firing in a reduction atmosphere gave a matt and opaque glaze, in varying shades of brown, again depending on the composition of the

fly ash. On mixing different coloring oxides in the glaze, for example :  $\text{NiO}$ ,  $\text{CoO}$ ,  $\text{CuO}$ ,  $\text{MnO}_2$  and  $\text{Fe}_2\text{O}_3$ , in the weight range 1-5 %, a more attractive color could be obtained. Increasing the coloring oxide concentration up to 15 % did not change the color shade of the glaze. Mixing non-coloring oxides such as :  $\text{ZnO}$ ,  $\text{TiO}_2$  and  $\text{CaCO}_3$ , 2-10 % weight, reduced the sintering point and made the glaze surface more glossy in appearance. Finally, crazing articles with the suitable formular of fly ash glaze using dipping and spraying techniques, gave rise to good quality products in both cases whether coloring oxide was added or not. These glazes were considered to have potential usage in the pottery industry.