APPLICATION OF LOW TEMPERATURE LUMINESCENT GLAZE ON LABU SAYONG

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Thesis submitted in fulfillment of the requirements for the degree of Master of Art & Design

Faculty of Art & Design

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate (2011), Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Sayong fired clay is a raw material for Labu Sayong craft making in Malaysia. Labu Sayong is a pottery where it's functioning as a water vessel which the design and form was adapted from the pumpkin. Basically, the term labu is a pumpkin and Sayong is a location in Kuala Kangsar, Malaysia. Hence, it was called Labu Sayong to signify the origin of the clay and its uniqueness. Originally, Labu Sayong appeared in black with decoration on its surface where the motive of the decoration was inspired from flora and fauna. In present, Labu Sayong is one of the most iconic of the national heritage. In this thesis, the aim and motivation of the work is to revive the appearance of Labu Sayong by introducing the luminescent effect on its body without compromising its original appearance. Hence, SrAl$_2$O$_4$:(Eu$^{2+}$,Dy$^{3+}$) ceramic compound was employed as a candidate for the luminescent materials. In the preliminary investigation, it was concluded to apply the luminescent materials on the decoration of the Labu Sayong. The SrAl$_2$O$_4$:(Eu$^{2+}$,Dy$^{3+}$) was successfully synthesized and sintered at 1250°C for 2 hours. In this investigation, the use of glazing technique was introduced as a mean to mount the luminescent materials on Labu Sayong body. This had affected the originality of the Labu Sayong but it was very minimal. In present, there is also modification performed by other craft makers to give an added value to the Labu Sayong. Thus, the low temperature transparent glaze was composed with several recipes as an adhesive to the luminescent materials to the Labu Sayong body. The final recipes used as a mounting adhesive was 80% boric acid, 10% kaolin and 10% silica as sintered at 800°C/0.5 hours. Finally, it was determined that SrAl$_2$O$_4$:(Eu$^{2+}$,Dy$^{3+}$) powder was successfully mounted on the Labu Sayong body via under glaze technique. The glowing of the luminescent materials was successfully measured using a photometer. The highest luminescent effect was 2.509 cd/rrr' for 2 minutes for the sample of on glaze technique. However the longest luminescent effect was 6 minutes with 0.358 cd/rrr' for under glaze sample. In general all samples were faded after 6 minutes. Finally this finding will benefit other researches and ceramic artist to embark on this innovative technique on other product and artwork and also to revive the Labu Sayong appearance as another of the significant national heritage icon as well as to preserve it.
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