

Mössbauer Spectroscopic Study on Colorative Mechanism of Celadon Glaze

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청자 유약 발색메카니즘에 대한 뢰스바우어 분광법에 의한 연구

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ABSTRACT

Systematic study on relationship between celadon coloring and glaze component was conducted by chromaticity analysis and Mössbauer spectroscopic analysis. The chromaticity (L^* , a^* , b^* values) and Mössbauer analysis results were correlated to the amount of Fe_2O_3 , TiO_2 , MnO , and P_2O_5 , which are the essential factors influencing celadon coloring. According to chromaticity analysis, celadon glaze color belongs to GY group when the addition of TiO_2 was 1.4%, whereas the color belongs to BG group when the addition of TiO_2 was 0.1%. For the GY group, the colors change from GY to YR with the decrease of brightness as the addition of TiO_2 , MnO , and P_2O_5 increases. According to Mössbauer analysis results, as the amount of divalent iron ion increases, the a^* and b^* values decrease, on the other hand, L^* value increases. The ratio of divalent iron ion produced in reductive sintering process is found to be 80~95% in this study, which induces the increase of L^* values in celadon glaze.

Key words: Celadon, Mössbauer, Colorative