Study on In-situ Direct Desulfurization Characteristic of Limestones under Oxy-CFB Combustion Conditions

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In recent years, As interest in environmental problem has increased, Various regulations have been strengthened. Oxy-fuel combustion is considered as one of promising technologies to reduce the emissions of greenhouse gas. In this study, the direct desulfurization reaction of 4 different kinds of limestones($CaCO_3$:72-95wt%) was carried out under Oxy-CFB combustion conditions(CO_2 concentration:60-95%, Temperature:600-1000℃). To investigate the effect of type of limestone, reaction temperature and CO_2 ratio on the desulfurization reaction, Sulfated samples prepared in a thermogravimetric analyzer were analyzed by Scanning Electron Microscope(SEM). Also, the gas-solid reaction model(SCM,VRM,MVRM,RP) was applied to derive the reaction rate equation for direct desulfurization of limestone.