

NUMERICAL INVESTIGATION ON THE INFLUENCE OF NON-GRAY GAS AND PARTICLE RADIATION IN OXY-FUEL COMBUSTION

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ABSTRACT: Oxy-fuel combustion has generated significant interest for carbon capture and storage. In this paper, an improved non-gray WSGG model for oxy-fuel combustion has been verified in an enclosed rectangular box, and the results from the exponential wide band (EWB) model set as benchmark data. The influence of particle radiation parameters is investigated in different radiative path length. The effect of the radiation parameters of the char has a greater impact in the small optical path length. However, the effect of ash is more significant in the large path length. Moreover, the different coupling methods of particle and non-gray gas radiation model has been compared. The errors of different coupling methods decrease with the increase of the radiation path length.