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Models for differential diffusion in turbulent non-premixed combustion[1] HAIFENG WANG, Purdue University — Models for differential diffusion are developed and are incorporated in the flamelet model for turbulent non-premixed combustion. The models are based on the limiting behavior of differential diffusion in turbulent combustion at zero and infinite Reynolds numbers. The effect of differential diffusion in a finite Reynolds number flame is approximated by the blending of the two limits. A turbulent non-premixed CH4/H2/N2 jet flame is adopted as a validation test case. The modeling results are found to be in excellent agreement with the experimental data, including the level of differential diffusion.

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