

## عنوان مقاله:

Multi-phase FVM Numerical Modeling of Flare Plume Air Pollution

## محل انتشار:

چهارمین کنفرانس بین المللی پژوهش های کاربردی در علوم و مهندسی (سال: 1398)

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## خلاصه مقاله:

Multi-phase flows in atmosphere are considered here as some level of phase or gas component separation at a scale well above the molecular level of plume components in atmosphere. Therefore, it is to be classified according to the state of the different phases or components and refer to independent gas components mixed with water vapor, gas/particle or bubbly flows and so on, as air/plume flows in atmosphere. The harmful effect of air pollution of flares is an important issue in every society through the world. Health and economic problems of air pollution have made the scientists turn to investigate its dissipation and developing knowledge of resources during the recent years. Otherwise, predicting the criteria pollutant concentration, considering the interaction between three factors atmospheric conditions, topography and pollutant producing plays an important role in order to deal with air pollution and its numerical prediction. Flares in oil operation industry are of the important and income industries, that there is a need to predict its plume dissipation to control or assess the pollution as it develops. The advection and diffusion of CO, NO<sub>x</sub> and SO<sub>2</sub> are the most important pollutant components from the gas flaring in oil operation industry. Therefore, as the result of this numerical research, the advection and diffusion of these pollutants through a low pressure flare without mixing factor is investigated by the means of Computational Fluid Dynamics modeling (CFD). The conducted numerical solution of flare pollution outlet flow and dispersal model has been extended to include pollutant sources, wind speed, density change versus temperature with a prescribed pollution exit velocity. This allows a more realistic treatment of industrial pollutant sources which often are most relevant for air quality in urban areas. The proposed model has been developed upon five equations of mass, momentum and energy balance. This study shows a plausible behavior of simulated pollutant plumes as simulated by the proposed model is able to predict .summer and winter day upon different natural boundary conditions

## کلمات کلیدی:

Numerical Modeling, Flare, Computational Fluid Dynamics, Concentration of Pollutants

## لینک ثابت مقاله در پایگاه سیویلیکا:

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