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Investigating the effect of UV radiation changes and substrate temperature in photo-catalytic destruction of toluene in a circular fluid substrate reactor

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In this study, the photo-catalytic oxidation of toluene was investigated in a circular fluid substrate reactor. TiO_2-P_{25} particles coated on silica gel particles were used as photo-catalyst. This photo-catalyst was used to remove toluene in a fluid substrate reactor and the photo-catalytic effect on toluene by using this catalyst was studied in various conditions of relative humidity variables, UV intensity and substrate temperature. The results showed that in addition to active hydroxyl, other oxidizing agents such as ozone can affect the oxidation process rate. It was also found that in addition to the independent effect of each of these variables on the efficiency of toluene removal, these variables themselves are interdependent and mutually influential and in order to have the appropriate efficiency, all these variables should be examined together in the appropriate conditions.

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