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Effect of Reynolds number on flow and mass transfer characteristics of a 90 degree elbow NOBUYUKI FUJISAWA, YUYA IKARASHI, TAKAYUKI YAMAGATA, SYOICHI TAGUCHI, Niigata University — The flow and mass transfer characteristics of a 90 degree elbow was studied experimentally by using the mass transfer measurement by plaster dissolution method, the surface flow visualization by oil film method and stereo PIV measurement. The experiments are carried out in a water tunnel of a circular pipe of 56mm in diameter with a working fluid of water. The Reynolds number was varied from 30000 to 200000. The experimental result indicated the change of the mass transfer coefficient distribution in the elbow with increasing the Reynolds number. This phenomenon is further examined by the surface flow visualization and measurement of secondary flow pattern in the elbow, and the results showed the suggested change of the secondary flow pattern in the elbow with increasing the Reynolds numbers.

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