Chiral Symmetry Breaking and Deracemization Of Sodium Chlorate In Taylor Vortex Flow

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In our previous study, the chiral symmetry breaking and deracemization in turbulent flow were investigated. The results demonstrated significant influence of random turbulent eddy flow on the secondary nucleation during the induction period, resulting in the initial chiral symmetry breaking. The initial chiral symmetry breaking was enhanced as increasing the agitation speed or decreasing the cooling rate, due to the promotion of the secondary nucleation during the induction period. In the present study, effect of periodic fluid motion of Taylor vortex flow on the chiral symmetry breaking and deracemization was investigated. According to results, The initial chiral symmetry breaking was also enhanced when increasing the agitation speed or decreasing the cooling rate, It is interested to note that the initial chiral symmetry breaking in Taylor vortex flow was always much higher than that in turbulent flow, as Taylor vortex flow was highly effective on the induction of nucleation and phase transformation during crystallizations. So, the deracemization was also much more facilitated in Taylor vortex flow than in random turbulent eddy flow.