Performance changes of Couette-Taylor vessel according to geometric shapes

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Crystallization process, one of separation process, is being used widely in industry. because this process use less energy than others. However there is a drawback. In crystallization process, batch reactor is usually used but it is inappropriate to continuous mass product. Couette-taylor vessel should be good alternative. It has been studied for performance change with various concentrations of the reactants, axial flow speed and inner cylinder rotating speed. But there is no study about geometry of vessel. In this study, when shape of inner cylinder is transformed from circular cylinder into truncated circular cone, it is researched how performance change using COMSOL 3.5a. Results were as follows: As angle increase, which mean that gap of outlet area become narrow and that of inlet area are enlarged, periods of vortices increase and conversion rate and the number of vortices cell in gap decrease.