



G09.37

**Study the Effect of Nozzle Geometry on Hydroentangling Water-Jet Breakup**

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This paper investigates the effect of nozzle geometries on hydroentangling water-jet breakup by simulating characterizing water flows inside cone-up and cone-down nozzle geometries. The simulations reveal that the flow patterns inside the two nozzles are entirely different, which results in a case that is the jet velocity profile across the emergent water-jet discharged from the cone-down nozzle is more uniform than that across the emergent water-jet discharged from the cone-up nozzle and the initial turbulence intensity at any point across the emergent water-jet discharged from the cone-down nozzle is much lower than that at the corresponding point across the emergent water-jet discharged from the cone-up nozzle. This indicates that the water-jet produced by the cone-down nozzle remains collimated and coherent for a longer length, which is suitable for hydroentangling process.