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Residence Time and Mixing in a Free Helix Extruder

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We have continued to evaluate the characteristics of our Free Helix chaotic mixing extruder. We have developed a method to get closer to a true impulse insertion of the dye used to follow mixing and residence time. We will discuss the operation of this device regarding operation as an extruder, as a chaotic mixer and as free helix pump. Experimental data for the several operation modes will be compared. Using one set of operation conditions the long tail normally found for RTD in extruders essentially is eliminated. The experimental results will be compared with our theory.