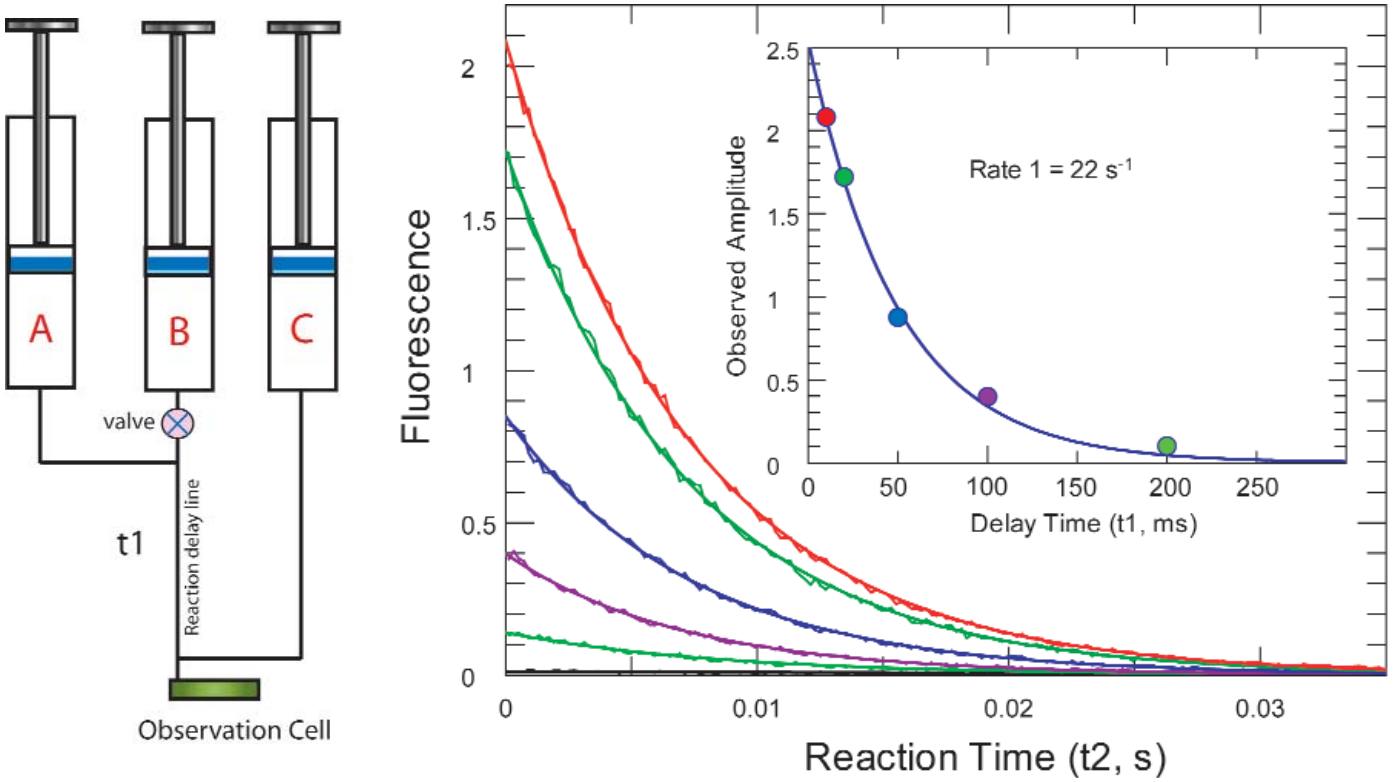
KinTek Corporation

Double Mixing Experiments for the KinTek SF-2005 Stopped-Flow

Taking advantage of the precision motor controller and the three drive syringes, the standard configuration of the *KinTek SF-2005 Stopped-Flow* allows double mixing experiments to be performed in a manner not possible with the old-fashioned air cylinder (pneumatic) stopped-flow instruments. These experiments provide methods to observe reaction intermediates not visible using single mixing methods. In a double-mixing experiment, two reactants are first mixed and then after a variable reaction time, t1, a third reactant is added to the mixture.

The *KinTek SF-2005* allows t1 reaction times as short as 7.5 msec using a simple, reliable setup. Longer t1 reaction times are acheived using the precision motor drive to pause for a defined time period, allowing solutions in the reaction delay line to age before being mixed with solution C. Reaction times are programmed through easy to use menus.

The system is simple, reliable, and accurate...*The KinTek Advantage*.



Double Mixing Experiment. The diagram at the **left** shows the setup where solutions from syringes A and B are first mixed and allowed to react for time, t1, then mixed with the solution from syringe C before entering the observation cell. Times for t1 can be as short at 6 msec. Longer times are acheived by causing the precision motor drive to pause in the delay line to allow the reactants to age for any desired reaction time. The figure on the **right** shows data collected using a simple fluorescence test reaction involving the reaction of N-acetyl tryptophanamide (Trp) with N-bromosuccinamide (NBS). Syringe A contained Trp, syringe B contained a low concentration of NBS, while syringe C contained a higher concentration of NBS. Transients recorded with different t1 ageing times (10, 20, 50, 100, 200, 500 msec) are shown in the larger figure. In the **inset** the amplitude of the observed transient is plotted as a function of the delay time, t1. Plotting the observed amplitude versus time defines the rate of the reaction that occurred during the ageing time. This demonstrates the outstanding performance and accuracy of the KinTek double mixing setup.

Changing over between single- and double-mixing experiments is easy. Single-mixing experiments involve mixing solutions from syringes A and C. To switch to a double-mixing experiment, just change the position of the valve contained within the stopped-flow syringe assembly to include the sample from syringe B in the flow path. You can even change in the middle of an experiment without emptying syringes A and C.

Some stopped-flow manufacturers charge a considerable premium for a double-mixing accessory that does not even come close to the specifications of the KinTek double mixing setup that is standard with every instrument. At KinTek, we believe in giving scientists the tools they need even before they know they need them! Once you have the full functionality of a premier *SF-2005 Stopped-Flow* at your fingertips, you will be inspired to do new and creative experiments you had never even considered before.

Note: this system will not work with pneumatic stopped-flow systems, as it requires a precision motor drive.

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