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Mixing Enhancement in a Very Low Reynolds Number Liquid Shear Flow[1] ROHIT NEHE, Michigan State University, HUI HU, Iowa State University, MANOOCHEHR KOOCHESFAHANI, Michigan State University — We consider the shear flow created by two parallel streams where the Reynolds number is so low that the natural flow instabilities are completely damped and mixing occurs only at the diffusion interface between the two streams. Our interest is to increase the number of diffusion interfaces, in order to enhance the amount of molecular mixing, by imposing an external perturbation on the flow streams. LIF flow visualization is used to investigate the general features of the flow, while chemically reacting LIF is employed to quantify the extent of molecular mixing. Results will be presented over a range of perturbation frequencies and amplitudes.

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