

Acoustofluidic Delivery Systems for X-ray Crystallography

This project aims to develop acoustic focusing inside microfluidic devices for improved sample delivery to world-class X-ray facilities, like the MAX IV Laboratory in Lund and the EuXFEL in Hamburg. The student will optimize a novel mix-and-inject delivery system (see figures below), manufactured using state-of-the-art laser etching at collaborators in Germany, using COMSOL simulations, acoustic waves and flow parameters to enhance sample handling and control. This project represents a unique opportunity to contribute to cutting-edge research at the interface of fluid dynamics, acoustics and X-ray science, with real-world applications in structure determination of proteins for next-generation drug discovery.

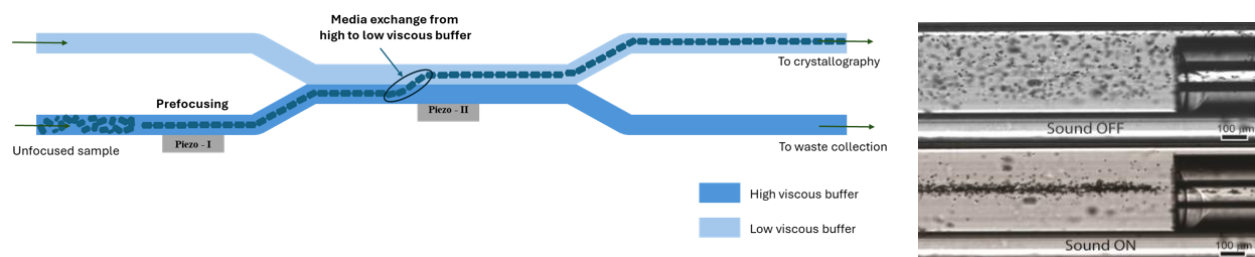


Fig. 1. Schematic mix-and-inject delivery system (left) based on acoustic focusing of protein crystals (right).

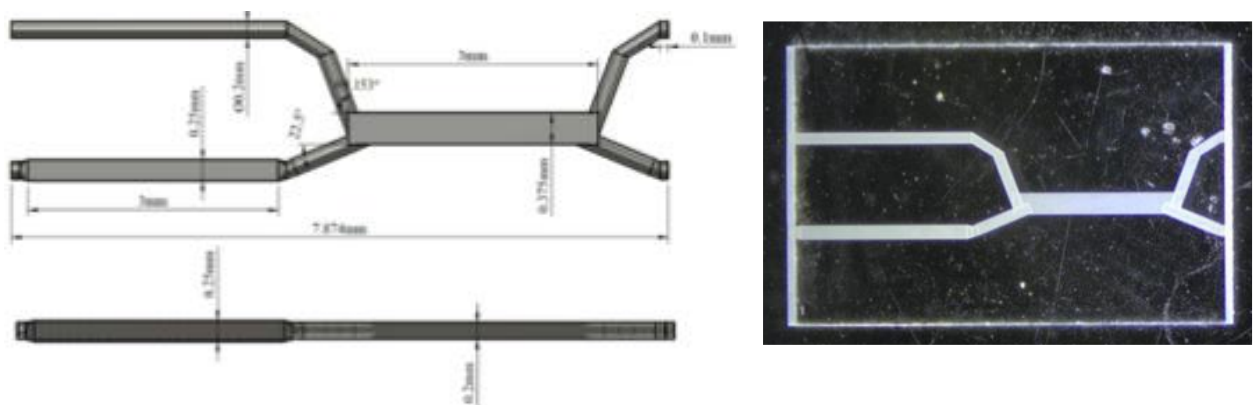


Fig. 2. CAD design (left) and prototype in glass (right) of a microfluidic cavity for a mix-and-inject delivery system based on acoustic focusing of protein crystals.