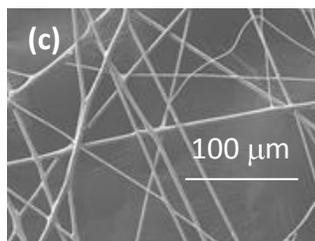
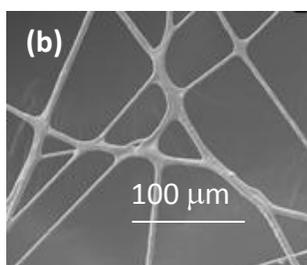
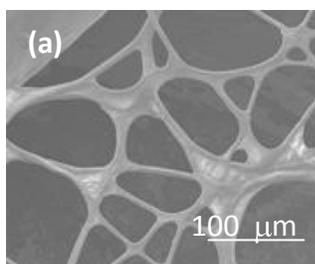


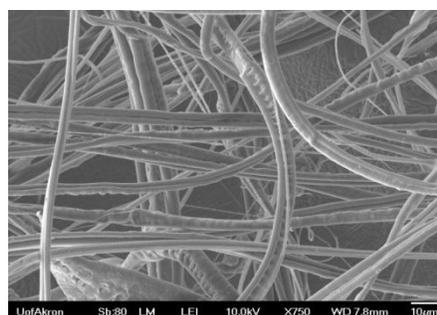
Nanofibers by Gas Jet Method

Our group is currently developing a process for production of polymeric nanofibers at *20 times higher rate per nozzle for the same fiber diameter than with electro-spinning technology*. The process is capable of producing single-component fibers, bi-component fibers with sheath-core morphologies, and bi-component fibers with side-by-side morphologies. The method exploits hydrodynamic forces and unique rheological properties of polymer solutions and polymer melts in conjunction with thermodynamics of phase separation and thermo-reversible gelation.

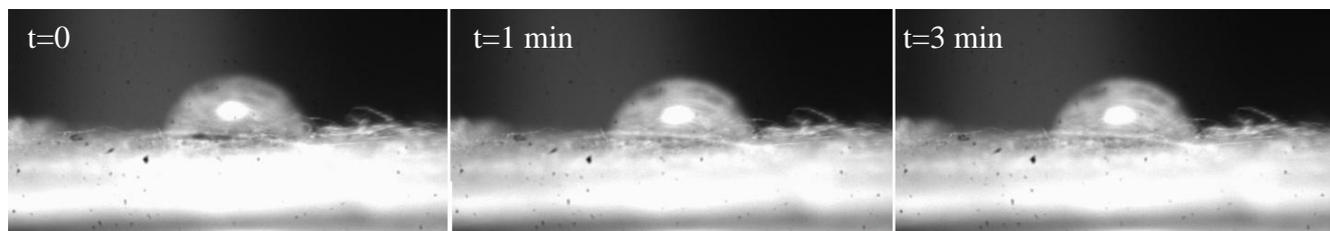
The method provides important new options for the economical formation of multicomponent fibers with a wide range of morphologies, including, single fibers, coaxial fibers of more than two polymers, side-by-side fibers, mixtures of single, side-by-side, and coaxial fibers, and multiple parallel (islands in the sea) fibers. Some examples are presented below.



SEM images showing nano-knots produced in situ.



SEM image showing side by side morphology



Optical images showing water droplets sitting on a nanofiber mat produced from a 50:50 w/w mixture of a hydrophobic and a hydrophilic polymer.