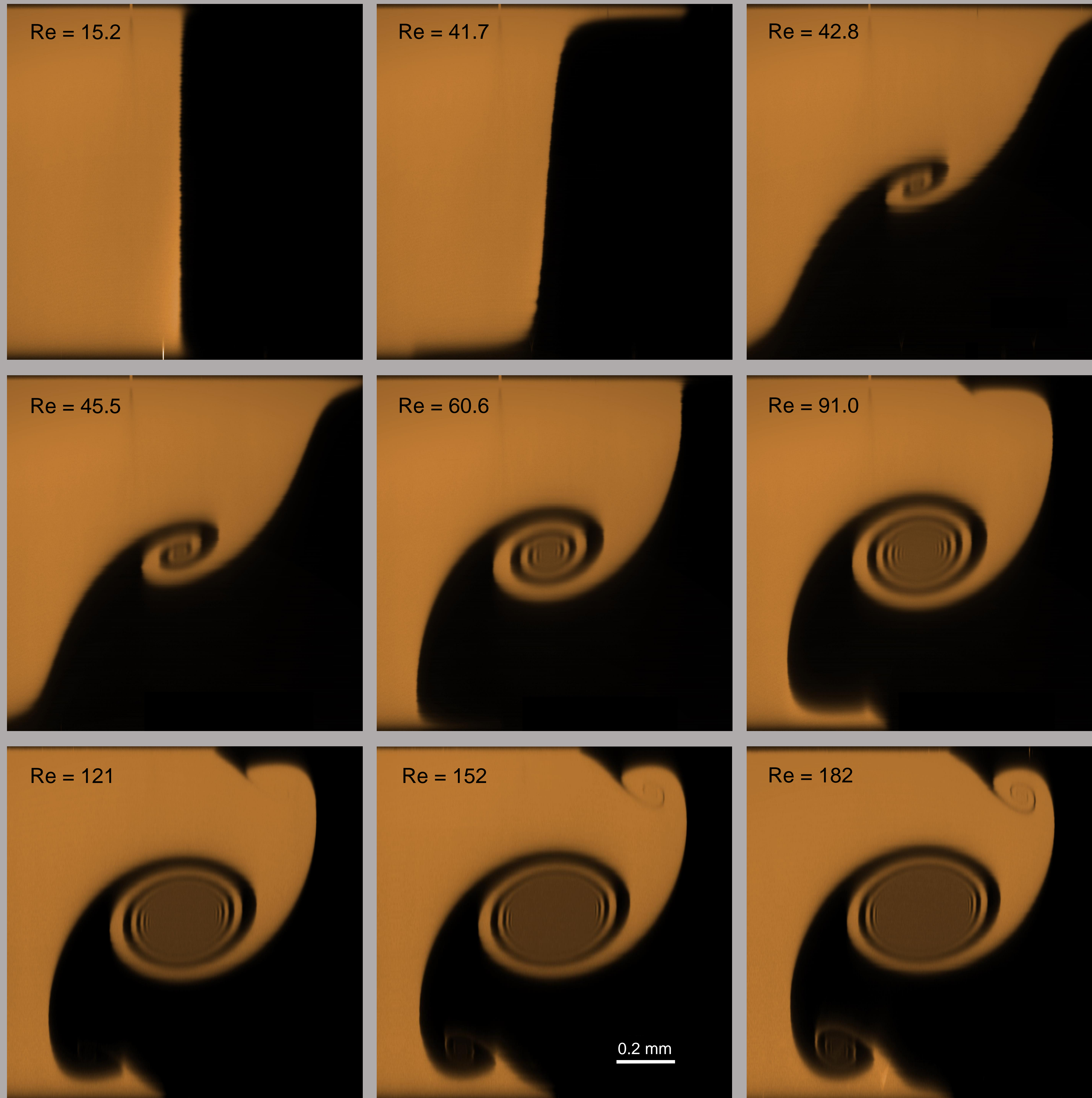


Spiral vortex formation at the intersection of two fluid streams

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When two opposing fluid streams coincide at the junction of bisecting channels, a steady spiral vortex is generated as the fluid flow velocity is increased. This symmetry-breaking flow bifurcation arises due to random imbalances between Dean vortices formed due to centrifugal forces around the corners of the junction. Vortex growth is driven by vortex stretching in the extensional flow along the outlet axis [1]. By adding a fluorescent dye to one of the fluid streams and using laser-scanning confocal microscopy, we have achieved high-resolution imaging of this striking flow phenomenon.

