The Confined Impinging Jet (CIJ) and Multi Inlet Vortex Mixer (MIVM) mixers have been designed and characterized in research led by Prof. Robert Prud'homme at Princeton University. His research group has produced a number of articles highlighting their use in the production of nanoparticles using scalable processing techniques:

Design and Evaluation of the Confined Jet Mixer (CIJ)

Johnson, B. and Prud'homme, R. Chemical processing and micromixing in confined impinging jets. *AIChE Journal*. **2003**. https://aiche.onlinelibrary.wiley.com/doi/pdf/10.1002/aic.690490905

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Liu, Y, et al. Mixing in a multi-inlet vortex mixer (MIVM) for flash nano-precipitation. *Chemical Engineering Science*. **2008**. https://www.sciencedirect.com/science/article/pii/S0009250907007774

Markwalter, C. and Prud'homme, R. Design of a Small-Scale Multi-Inlet Vortex Mixer for Scalable Nanoparticle Production and Application to the Encapsulation of Biologics by Inverse Flash NanoPrecipitation. *Journal of Pharmaceutical Sciences.* **2018**. https://www.sciencedirect.com/science/article/pii/S0022354918303071

Applications of the Technology

Saad, W. and Prud'homme, R. Principles of nanoparticle formation by flash nanoprecipitation. *Nanoday*. **2016**. https://www.sciencedirect.com/science/article/pii/S1748013215301201

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Markwalter, C. et al. Flash NanoPrecipitation for the Encapsulation of Hydrophobic and Hydrophilic Compounds in Polymeric Nanoparticles. *JOVE*. **2019.** https://www.jove.com/video/58757/flash-nanoprecipitation-for-encapsulation-hydrophobic-hydrophilic