

New Kid on the Beam: adding asymmetrical-flow field-flow fractionation (Af4) to tackle polydispersity

Over the past years, it has been clearly demonstrated that incorporating size-exclusion chromatography (SEC) directly before the collection of SAXS data is very beneficial as it ensures sample homogeneity. However, not all biological systems can be subjected to SEC without any drawback. Sample dilution, risk of sample disruption through interaction with the column's stationary phase, and limitation in the choice of buffer and additives can often diminish the success of employing SEC. For these samples, we propose using a different online separation approach – Asymmetrical Flow Field-Flow-Fractionation (AF4). Here, the separation takes place in a thin liquid film and thereby prevents unwanted interaction effects. We recently were able to demonstrate the successful use of the removal of free mRNA from lipoplex formulations (LPX). Furthermore, important quantitative parameters could be retrieved for the separated particles. Currently, we are installing an AF4 set-up at P12 and here, I discuss its potential benefits for a wide range of applications. This project is financed through the German BMBF (grant 05K22UM3).

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