

## W0411

**Mapping Protein Precipitation Diagrams using Microfluidics.** Morten O. A. Sommer, Jens-Christian Navarro Poulsen, Sine Larsen, Centre for Crystallographic Studies, Dept. of Chemistry, Univ. of Copenhagen.

Using a microfluidic formulator device<sup>1</sup> several thousand chemical experiments can be performed consuming less than 10  $\mu$ L of purified protein sample; thus, a detailed pre-characterization of protein solubility can be obtained prior to setting up crystallization experiments. The microfluidic formulator has been used for experimental characterization of protein solubility and detailed mapping of precipitation diagrams for several proteins and precipitants. The experimentally determined protein solubility information provides the basis for a rational approach for setting up tailor made crystallization experiments. Thus, protein sample is only consumed in crystallization experiments which have a high probability of yielding crystals, since the crystallization trials are focused to regions of the protein phase diagram where the physical chemistry of the protein should favor crystallization. The outlined approach allows for a rational approach to protein crystallization for proteins that are only available in small amounts such as membrane proteins and low abundance proteins purified from native tissue. We present our results on applying the approach to several proteins including membrane proteins.

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