

P033 Stability of amyloid fibrils formed by IAPP protein studied by AFM.

Gjertrud Maurstad¹, Marcus Prass¹, Louise C. Serpell² and Pawel Sikorski¹

1. Dept. of Physics, Norwegian University of Science and Technology. NO-7491 Trondheim, Norway; 2. Dept. of Biochemistry. School of Life Sciences. University of Sussex. Falmer, BN1 9QG. UK

Using atomic force microscopy (AFM) we have investigated the stability on dehydration of amyloid fibres formed by human islet polypeptide (IAPP). Amyloid fibres were imaged in liquid and in air. In addition, fibres dried on the mica surface were rehydrated and re-examined both in liquid and in air (after consecutive re-drying). As reported previously, the initial drying process does not result in any major change in the amyloid appearance and the dimensions of the fibres are preserved. However, when once-dried samples are rehydrated, fibril stability is lost. They disintegrate into small particles that are visible attached to the mica surface. This process is further confirmed by studies of the rehydrated samples after drying, on which the morphology of the fibres is clearly changed. The observed change indicates that dehydration is causing a change in the internal structure of the amyloid fibrils. This has important implications for studies of amyloid fibres by other techniques. For example, for fibre X-ray diffraction studies, due to possible influence of hydration and sample history on amyloid structure, preparation and study of amyloid samples with controlled humidity requires more attention.