# Experimental report

04/03/2021

**Proposal:** 9-13-562 **Council:** 4/2016

**Title:** Structural stability of silk proteins in D2O by SANS

**Research area:** Biology

**This proposal is a new proposal**


**Main proposer:** Cedric DICKO

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**Samples:** silk fibroin

| Instrument | Requested days | Allocated days | From | To |
|---|---|---|---|---|
| D33 | 1 | 1 | 18/11/2014 | 19/11/2014 |
| D22 | 1 | 0 | | |


## Abstract:

The formation of silk fibres in both spiders and silkworms is characterized by a conversion of short range ordered structures in solution into long range ordered beta-sheet rich structures in the final fibre. For silk we hypothesise that local flexibility of the protein chain will mediate silk protein storage/beta-sheet aggregation. To understand the mechanism we propose to study how concentration affects the local flexibility of silk fibroin both in its reactive (native) state and in a un-natural reconstituted silk fibroin. The results will have an impact on how we control silk storage and stability as well as for other hydrogen bonding polymers and proteins

**Report on Experiment 9-13-562 on D33 – Nov 2014**

## The structural stability of silk proteins in $D_2O$ by SANS

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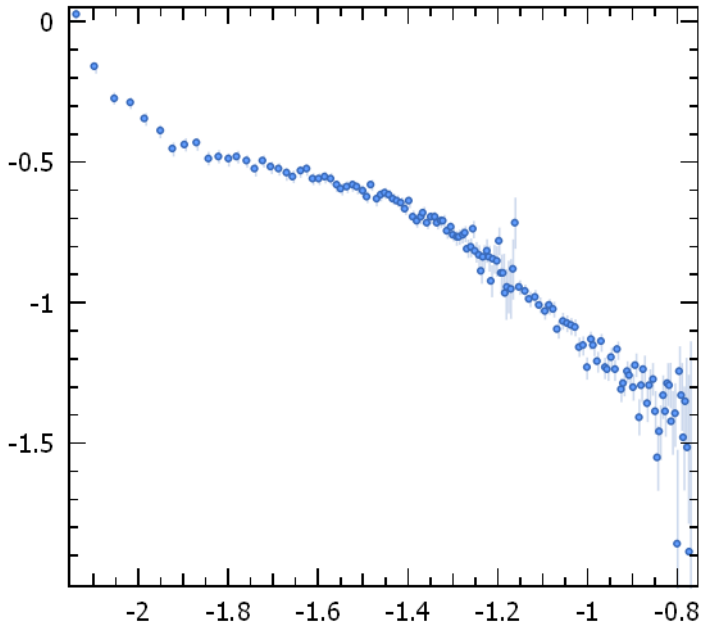
We have carried out the experiment 9-13-562 (D33) on highly concentrated native silk proteins from the *Bombyx mori* silkworm silk species. Our principal aim was to "disperse" the silk in $D_2O$ and investigate the colloidal stability of the exchanged proteins.

Unfortunately, we found that the high concentration silk proteins did aggregate immediately or did aggregate after a few frames.

The figure below shows a typical scattering curve of the silk proteins in D2O.




No further treatment or exploitation of the data.