ESRF	**Experiment title:** Aqueous gels of an optically active bile salt.	**Experiment number:** 02-1-031
Beamline: D2-D2AM	**Date of Experiment:** from: 20.09.96 to: 23.09.96	**Date of Report:** 20.03.97
Shifts: 9	**Local contact(s):** A. de Geyer, J.P. Simon	*Received at ESRF :*

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Report:

Sodium lithocholate is a member of a familly of bile salts (deoxycholic, cholanic acids) which forms gelling aqueous solutions at low concentration (~ 0.1%) in appropriate pH conditions. The lithocholate (NaLC) is a chiral compound which can form helical aggregates. This feature motivates our interest to investigate the structure of the aggregates in the gel phases. Nine shifts have been allocated (09/96) for SAXS experiments on D2AM (experiment n° 02-1-031).

A first result concerns the gels in the dilute regime (0.1% - 1% NaLC). We have shown that the shape of the scattering curves depends on the pH (Fig. 1). For an optimum value of pH, the scattering patterns exhibit several strikingly well defined intensity oscillations. This suggests that a well defined organization occurs in the gel aggregates. Interestingly, the positions of these intensity oscillations remain unchanged as the lithocholate concentration increases (0.1% - 3%), but the oscillations become more intense and defined (Fig. 2). On some gels, we can see up to height oscillations. The nature of this organization occuring inside the large fibrillar aggregates (cross section ~ 650 Å) is still under investigation.

Another result is that at high NaLC concentration (> 3%) several Bragg peaks (lamellar spacing: d = 510 Å) superimpose to the oscillations characterizing the dilute system (Fig. 3). More than four orders of diffraction are observed at small angle on oriented patterns obtained when the viscous gels are drawn out into long fibres (not shown here). How this higher order lamellar organization coincides with the fibrillar aggregates in the gel is a question which will be interesting to solve.

The measurements have been performed using a linear gasfilled detector. Preliminary tests have also been performed using image plates. Interestingly, some gels produced crossed-patterns suggesting that an helical organization may occur in the fibrillar aggregates. This point should be confirmed by other measurements with a 2D detector.

These results have been presented as a poster at the French-Israeli Conference on Complex Fluids (St Malo, september 1996).