MLF Experimental Report	提出日 Date of Report
課題番号 Project No. 2013B0283 実験課題名 Title of experiment: Liquid-Liquid interface for solvent extraction 実験責任者名 Name of principal investigator: Dr. Giovanna Fragneto 所属 Affiliation: Institut Laue-Langevin, 71 avenue des Martyrs, 38000 Grenoble, France	装置責任者 Name of responsible person Norifumi Yamada 装置名 Name of Instrument/（BL No.） BL16 – SOFIA 実施日 Date of Experiment 14–17 March 2014

試料、実験方法、利用の結果得られた主なデータ、考察、結論等を、記述して下さい。（適宜、図表添付のこと）
Please report your samples, experimental method and results, discussion and conclusions. Please add figures and tables for better explanation.

1. 試料 Name of sample(s) and chemical formula, or compositions including physical form.

We measured two samples for the liquid–air interface and three samples for the liquid–liquid interface.
The two samples for the liquid–air interface were composed by a mixture of D2O/H2O with LiNO3 and Nd(NO3)3 to get once an SLD equal 4 and once to get an SLD equal 2.
Starting from this samples, we measure the Liquid/Liquid interface for the following samples:

1 – Interface between Water+Ions* (SLD=2) and deuterated Dodecane (SLD=6.67)

2 – Interface between Water+Ions (SLD=4) and deuterated Dodecane (SLD=6.67)

3 – Interface between Water+Ions (SLD=4) and deuterated Dodecane with 0.08 M of DMDBTDMA (SLD=6.4)

**For Ions we mean 2 M of Lithium Nitrate and 0.25 M of Neodymium Nitrate*

2. 実験方法及び結果（実験がうまくいかなかった場合、その理由を記述してください。）
Experimental method and results. If you failed to conduct experiment as planned, please describe reasons.

We developed a new Liquid/Liquid cell for Reflectivity experiments (x–Ray and Neutron). On the veamline BL16 we have been able to measured the interface between two immiscible liquids (water and dodecane) with or without the DMDBTDMA needed to study the solvent extraction process.
We are still analyzing the data obtained on SOFIA but we can report the data and the first analysis in figures **1,2** for water–air and water–oil interface.
As shown in the figures we can say we are able to measure the liquid/liquid interface with the experimental setting we developed and we reach our purpose. In any case we have to improve our technique due to the strong signal attenuation due to the size of the sample.
This effect affected a little bit the measurements in presence of the hydrogenated extractant in oil (DMDBTDMA in Deuterated–Dodecane) were we lost many counts per second.

2. 実験方法及び結果（つづき） Experimental method and results (continued)

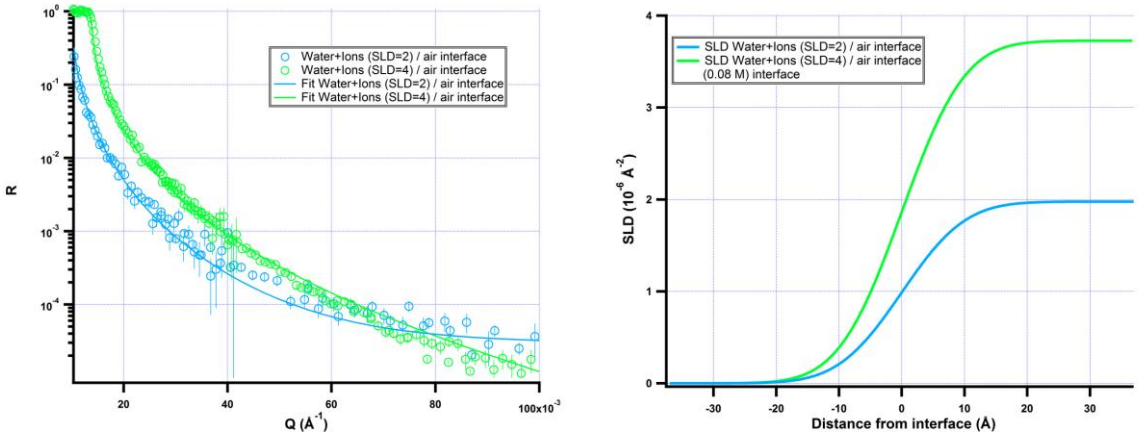

Figure 1: ***(Left)*** The data and the fits obtained with the best fitting process for the two water+ions/air interface. In green the water has an SLD=4, in sky blue the water SLD is equal 2. ***(Right)*** The SLD profiles for the two interfaces.

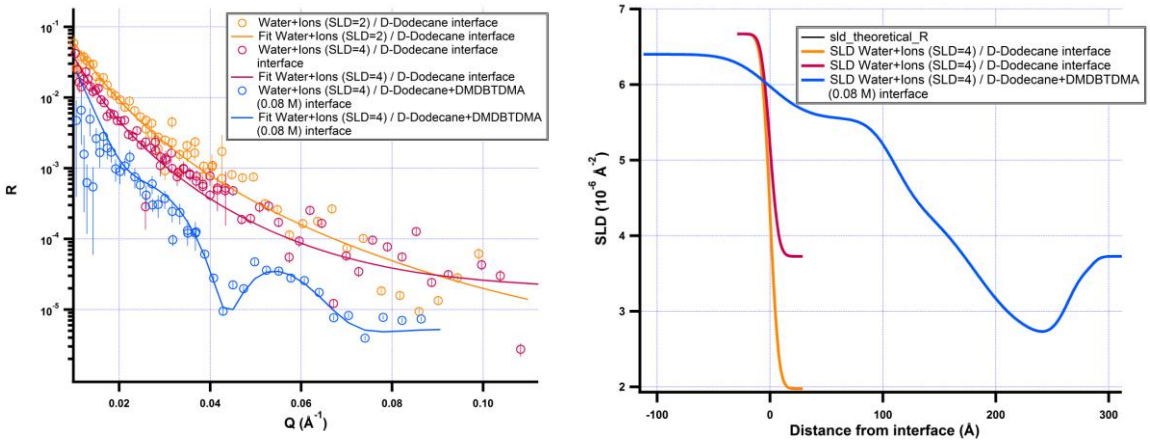

Figure 2: ***(Left)*** The data and the fits obtained with the best fitting process for the three water/dodecane interface. In sky blue we show the data with the extractant molecule (DMDBTDMA). ***(Right)*** The SLD profiles for the three interfaces.