MLF Experimental Report	提出日 Date of Report
課題番号 Project No. 2014A0248 実験課題名 Title of experiment Neutron diffraction study of NADH-cytochrome b_5 reductase (b5R) 実験責任者名 Name of principal investigator Taro Tamada 所属 Affiliation Japan Atomic Energy Agency	装置責任者 Name of responsible person Katsuhiro Kusaka 装置名 Name of Instrument/（BL No.） iBIX/BL-03 実施日 Date of Experiment May.25~Jun.07

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.

NADH-cytochrome b_5 reductase (b5R) ($C_{1420}H_{2218}N_{382}O_{408}S_{12}P_2$)

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.

A large crystal (~2 mm^3 volume) was soaked in deuterated solution in an anaerobic chamber. Then, the crystal was soaked in cryoprotectant solution (18% D-Glycerol) in aerobic condition. The crystal was mounted on a nylon loop and flash frozen in a nitrogen-gas stream (100K) at iBIX (Figure 1). The diffraction experiment was performed at 100 K using the wavelength range of 1.1-5.0 Å. Diffraction spots up to 1.34 Å were observed by 8.5 hours exposures (Figure 2). Total of 28 data sets were collected by changing the orientation of the crystal in 11 experimental days. Diffraction intensities were integrated using the *STARGazer* program. The resolution of the merged data set was 1.4 Å, and the completeness was 85.4%.

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

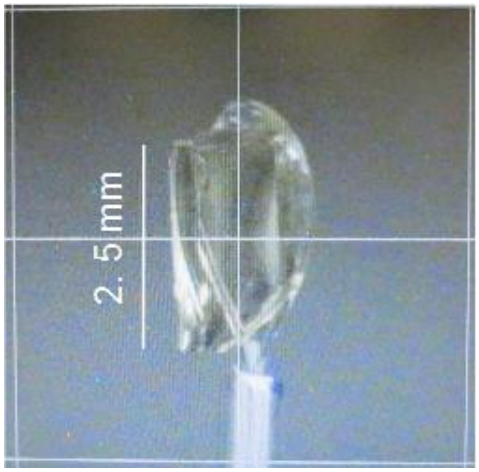
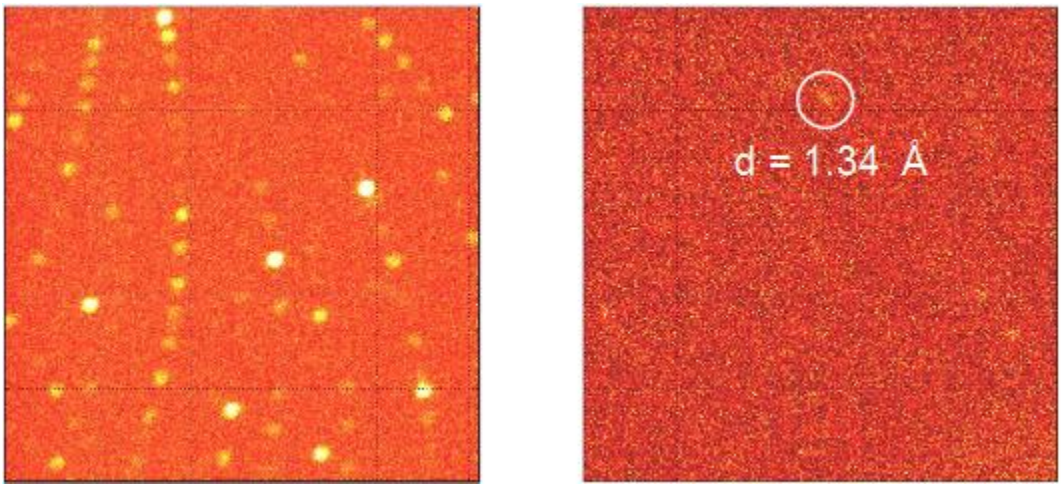


Figure 1. A crystal photograph of b5R mounted on a nylon loop.



2θ = 54° 2θ = 161°, TOF = 28 msec

Figure 2. Neutron diffraction image from the crystal of b5R.