

実験報告書様式(一般利用課題・成果公開利用)

(※本報告書は英語で記述してください。ただし、産業利用課題として採択されている方は日本語で記述していただいても結構です。)

 MLF Experimental Report	提出日 Date of Report
課題番号 Project No. 2016A0068 実験課題名 Title of experiment Topochemical Synthesis of Titanium-based Perovskite Oxynitrides via Oxhydrides 実験責任者名 Name of principal investigator Takafumi Yamamoto 所属 Affiliation Kyoto University	装置責任者 Name of responsible person Toshiya Otomo 装置名 Name of Instrument/(BL No.) BL 21 実施日 Date of Experiment 2016/6/17-20

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.
Nitelized barium titanate $BaTiO_{2.4}N_{0.4}$

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.
Powder diffraction measurements for $BaTiO_{2.4}N_{0.4}$ at NOVA was performed at 50K to 450K. The diffraction data of 90° bank at several temperature are shown in Figure. At 450K, the sample seems cubic as $BaTiO_3$. Below, 420K, the 2 0 0 peak broadened, suggesting structural transition from cubic to tetragonal. Further decreasing of temperature below 300K the 2 0 0 (0 0 2) peak becomes sharp, indicating another structural transition from tetragonal. It is known that $BaTiO_3$ show the successive structural phase transitions at $\sim 170K$, $\sim 280K$, and $\sim 420K$. In this experiment, we find the successive structural phase transitions of $BaTiO_{2.4}N_{0.4}$ as $BaTiO_3$. We need further analysis of the neutron data to reveal the effect of the N3- substitution. We also need to measure X-ray diffraction data for several temperature to determine the precise structure and transition temperature.

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

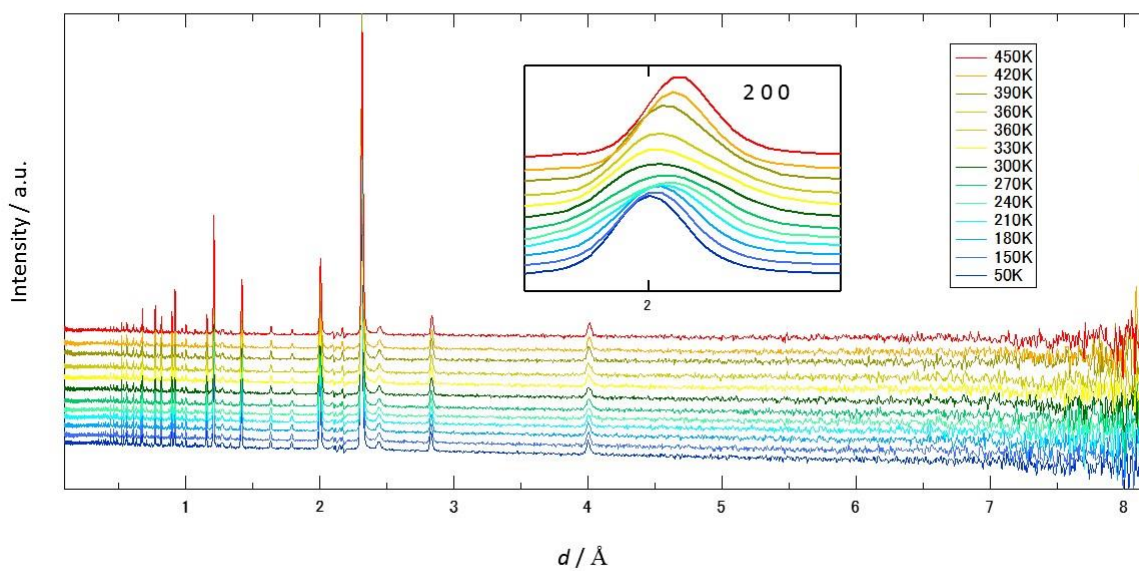


Figure. Powder diffraction data of 90° bank at NOVA