

## Introduction to X-Ray Diffraction at RIKEN SPring-8

Jordan DeWitt<sup>1, 2</sup>, Eiji Nishibori<sup>1</sup>, Kenichi Kato<sup>1</sup> and Masaki Takata<sup>1, 3, 4</sup>

<sup>1</sup>*RIKEN SPring-8 Center, Hyogo 679-5148, Japan*

<sup>2</sup>*Dept. of Physics, Northeastern University, Boston, MA 02115, U.S.A.*

<sup>3</sup>*Jpn Synchrotron Radiation Res. Inst. JASRI/SPring-8, Hyogo 679-5198, Japan*

<sup>4</sup>*Dept. of Advanced Materials, University of Tokyo, Chiba 277-8561, Japan*

The Northeastern University Cooperative Education Program (Co-op Program), in affiliation with RIKEN SPring-8, provides undergraduate students in science and engineering fields with the opportunity to experience first-hand what it's like to work in a fully-operational Synchrotron Radiation facility. Thanks to the efforts of Dr. Masaki Takata of RIKEN and Dr. J. Murray Gibson of Northeastern, students are offered the chance to travel from the U.S. to Japan to work at SPring-8 for 6 months. From analyzing diffraction data to physically working on the beamline, participating in a co-op at RIKEN SPring-8 provides Northeastern students with a wealth of experience that they likely would not be able to obtain elsewhere.

As a student at Northeastern studying for a BSc degree in Physics, having the chance to work hands-on with powerful electromagnetic waves for the purpose of scientific research is a great opportunity. For all the mathematical theories and formulae we study as students, if we never learn how these methods are applied, or how the acquired data from experiments is analyzed, we will be lost when we truly enter the field of scientific research. Currently, in my work at SPring-8, I am bolstering my knowledge of X-ray diffraction and analysis techniques. In the near future, I will be assigned to a beamline under the supervision of Dr. Eiji Nishibori, using powder and single crystal diffraction to analyze the properties of metallofullerenes, or thermoelectric materials, and potentially assisting in the correction of a newly installed detector.

**Fig. 1.** Photograph of newly installed X-ray detector Imaging Plate (IP) at RIKEN Materials Science Beamline number BL44B2 at SPring-8.

