

Introduction to Synchrotron Radiation and ERL in University Experimental Lessons

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The improvements of university experimental lessons have been developed [1,2]. One of the improvements is the lecture before the experiment, as shown in Table 1.

First, the topics are introduced in the lecture before the experimental lessons in Table 1. For example, synchrotron radiation and ERL(Energy Recovery Linac) are explained in a few minutes. But these topics were too difficult for students to understand. Thus, synchrotron radiation was described with a concrete sample; the Wakayama curry-poisoning incident in 1998. But it was difficult for many students to understand, because this incident was ancient history for students. How should be the synchrotron radiation explained for students to understand easily? One of the solutions will be the new concrete sample which is the analysis of the asteroid Itokawa by the Hayabusa mission.

<http://hayabusa.kek.jp/>

Second, three policies of the experimental chemistry have been taught; Thinking, Safety First and Cultivate Good Sense.

Third, the three principles on chemistry, which were Synthesis, Separation and Analysis, have been shown. The relations between these principles and the experimental themes also have been explained.

Table 1 The lecture before the experiment

1) Basic rules; punctuality and safety	One minutes
2) Policy: Thinking, Safety First, Cultivate Good Sense	Five minutes
3) Three principles on chemistry : Synthesis, Separation, Analysis	Three minutes
4) Topics: Synchrotron radiation, ERL and historical topics	Three minutes
Questions and Answers	
5) Background on the experimental theme	Five minutes
Questions and Answers	
5) Chips and cautions	Twenty minutes
Questions and Answers	

KEK Photon Factory professors and the author cooperated to form the X-ray fluorescence analysis which was composed with a single crystal and a position sensitive proportional counter at BL-4A in PF [3]. The author tried to apply this experience to university experimental lessons.

References

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- [3] K. OHASHI, A. IIDA, S. KISHIMOTO, Y. AMEMIYA and 2 co-authors, Adv. in X-ray Anal., **35B**, 1027 (1992).