1.1 Introduction

A large part of natural science is devoted to the task to explain macroscopic properties of the material surrounding us by the microscopic structures of the material under study. One of the most widely used methods to win knowledge of microscopic structures of material was in the past by simply „looking“ to the structure, i.e. by using visible light scattered or diffracted by the microscopic structure and analyzed with the human eye. It was for example essential to Robert Koch, who explained the mechanism of infectious illnesses of man, to be able to „see“ the bacteria under his microscope and to be able to identify the different structures of different bacteria causing different illnesses. Unfortunately, visible light can only be used to image structures which are large compared to the wave length of the light used. In order to be able to study even finer structures it is therefore understandable that light sources have been developed delivering light with significantly shorter wave length than the visible light and with even higher intensity and brilliance. The most brilliant light sources for short wave length light (X-rays) are nowadays the so-called synchrotron light sources.

Synchrotron light sources are instrumental in very many fields of science and technology. An exhaustive description of the application of the Synchrotron Radiation can be found in many text books. Easy and fast access to these synchrotron light source facilities is therefore considered essential for the development of science and also for the development of technological products and methods. This is why the board of Swiss Federal Institutes of Technology has taken the initiative in September 1995 to create a synchrotron light source in Switzerland. In November 1996 the Swiss Government approved this initiative and a final decision by the Swiss Parliament was reached in June 1997. Construction of SLS has started on June 2, 1998.