

## Current Status of Instruments in Chinese Spallation Neutron Source

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### Abstract

There are three day one instruments, high intensity powder diffractometer (HIPD), multipurpose reflectometer (MR), and small angle neutron scattering, for Chinese Spallation Neutron Source (CSNS) which will be constructed in 2018. In this paper, I will give an overview of these three instruments. And then I want report the details of the concept designs and some preliminary technical designs for HIPD and MR.

HIPD is planned for the user to study crystallographic and magnetic structures by using neutrons. The design with high neutron intensity will be helpful for the structural studies on small samples, some phase transitions and real-time chemical reactions. Therefore, the HIPD is The best resolution of HIPD is  $\Delta d/d \sim 0.2\%$  at high angle detector bank, and the time for collecting a typical "Rietveld-quality" diffraction histogram is in the order of minutes.

MR is an instrument optimized for examining thin films with nanometer scale structure, especially in regard to their magnetic properties with the removable polarized neutron devices. The scattering plane has been chosen horizontal to allow more convenient operation of the instrument and changing optional equipments for different users. Beside of the conventional capability to analyze the structural and magnetic depth profiles of the thin film samples, off-specular studies are feasible by using a 2D detector. Furthermore, *in situ* studies of the magnetic and structural properties might become reality by using an *in situ* MOKE measuring system.