



	Experiment title: XMCD Studies of Osmium Oxides	Experiment number: HC-2088
Beamline: ID12	Date of experiment: from: 03-12-2015 to: 09-12-2015	Date of report: 09-06-2016
Shifts: 18	Local contact(s): GUILLOU Francois	<i>Received at ESRF:</i>
Names and affiliations of applicants (* indicates experimentalists): Andrew Princep ^{1*} Andrew Boothroyd ¹ Marein Rahn ¹ ¹ University of Oxford, Clarendon Laboratory		

Report:

XMCD spectra and dichroism vs H curves were recorded at the Osmium L₂ and L₃ edges at 2.5K for powder samples of Ba₂LiOsO₆, Ba₂NaOsO₆, Ba₂CoOsO₆, Pb₂CaOsO₆, and a single crystal of Pb₂CoOsO₆. Additional dichroism vs H curves were collected at higher temperatures for Ba₂CoOsO₆ (70K, 120K), and Pb₂CoOsO₆ (43K, 60K). Additionally, Data was collected at the Co K-edge in Pb₂CoOsO₆ and Ba₂CoOsO₆, although the intensity was too weak for substantial analysis.

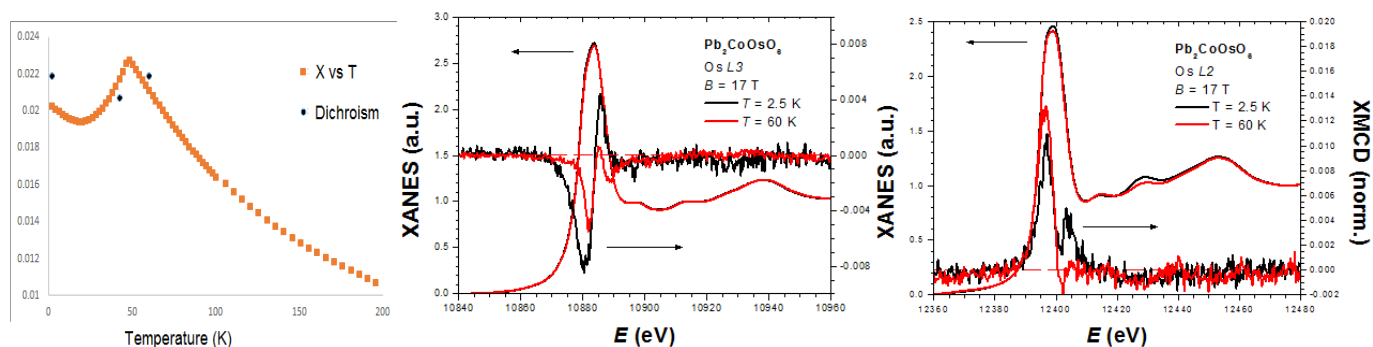


Figure 1. Magnetic susceptibility of Pb_2CoOsO_6 (Left) and XMCD at 2.5K (black) and 60K (red) for both the Osmium L₃ and L₂ edges (middle and right, respectively). Both spectra are taken at 17 Tesla.

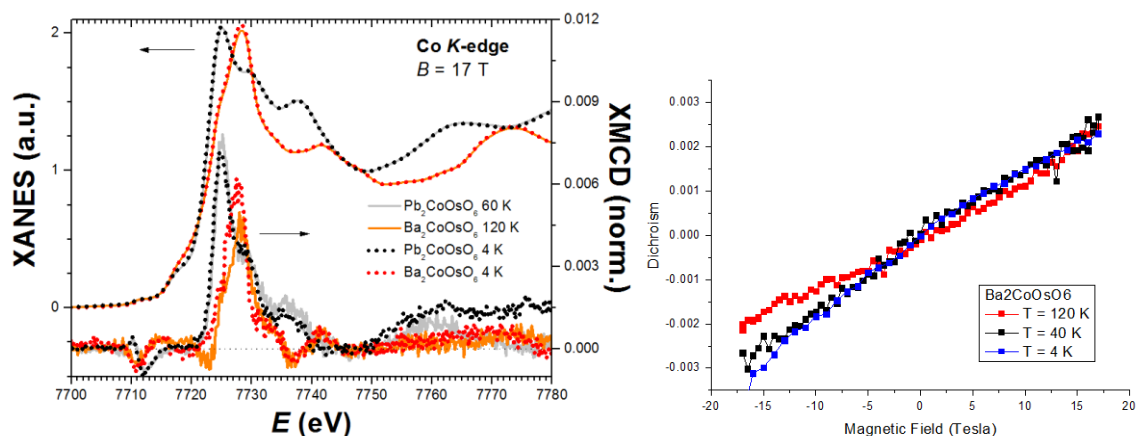


Figure 2. Attempted K-edge analysis of Cobalt XMCD in Ba_2CoOsO_6 and Pb_2CoOsO_6 .

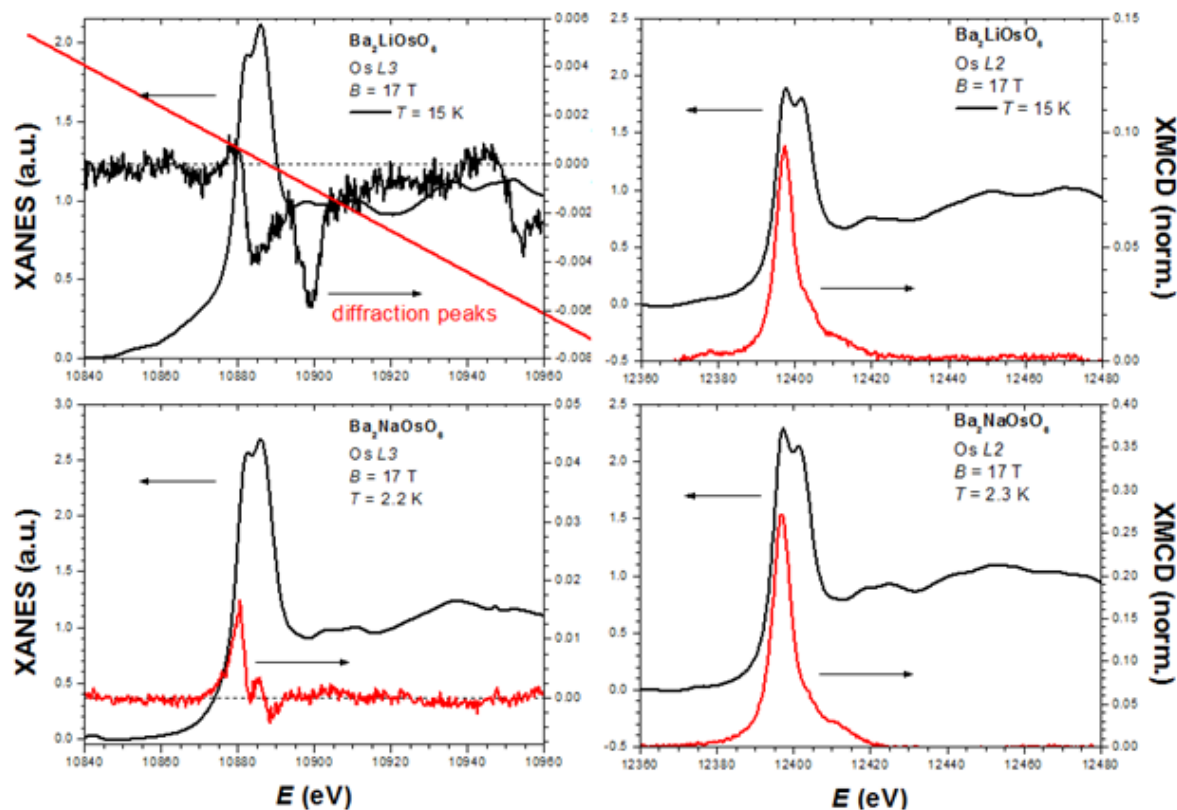


Figure 3. XMCD spectra of powder samples of (top) Ba_2LiOsO_6 and (bottom) Ba_2NaOsO_6 at the (left) L_3 and (right) L_2 edges

It is clear from Figure 3 that followup measurements need to be performed on a single crystal of Ba_2LiOsO_6 so that diffraction peaks can be avoided.

It would also be of obvious interest to investigate in more detail the temperature evolution of the XMCD signal in Pb_2CoOsO_6 , seen in Figure 1