

Abstract Submitted  
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**XMCD investigation of Rare Earth Metal at high pressure conditions** LUCIE NATAF, FRANCOIS BAUDELET, Synchrotron SOLEIL — The X-ray Magnetic Circular Dichroism is a selective magnetic probe for high pressure studies. Nowadays, XMCD under pressure is usually employed, mainly on 3d and 5d metal systems. We will present new results on Rare Earth metals. Up to now, most of the pressure works are devoted to the structural properties of RE. However, only a few works deal with the pressure effect on their magnetic properties. RE, having high magnetic moment and large anisotropy, are commonly used for practical applications. Nevertheless, their magnetic ordering temperature is below RT. Adding transition metals solves this limitation: the alloys then present the advantages of RE and the high magnetic ordering temperature of TM. To optimize the properties of these systems, a pressure study may be a better way than an empirical investigation. Interpreting the XMCD signal at the  $L_{2,3}$  edges of RE is very difficult since many contributions are involved. The important role of the 4f-5d interactions has to be taken into account and the quadrupolar transitions cannot be neglected. The quadrupolar transitions can be of the same order than the dipolar ones, since the 4f orbitals carry a much larger spin and orbital moments than the 5d. Under compression, each orbital may not be affected in the same way, thus giving rise to a separation of the dipolar and quadrupolar contributions and a better understanding of these signals. Among the few works dedicated to the magnetic properties of RE under pressure, it has been shown that metallic Dysprosium is no more magnetic above 7.5 GPa. Our XMCD measurements contradict this result since a signal is still observed.

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