(UNITECR-206-2013) Understanding microstructure/properties relationships related to the thermomechanical behaviour of high zirconia refractories

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High zirconia materials (HZ) constitute important part of furnaces structures for the manufacturing of glasses. The development of new compositions requires an increased control of the elaboration process.These materials exhibit specific thermo mechanical properties related to a microstructure containing monoclinic zirconia dendrites embedded into a silica-alumina glassy phase. The present study deals with the understanding of microdamage phenomena at a low scale during the cooling process applied to the sample. Mechanical characterizations are carried out to identify the chronology of the mi- crodamage. The coupling between microstructural texture of the material and the cooling process will also been investigated thanks to heavy experimental device (neutron diffraction facilities). Mi- crostructure observations will complete thermal experiments and allow identifying the main characteristics of such internal mechanisms.