

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Structure and dynamics of iron doped and undoped silicate glasses** CRISTIANE N. SANTOS, DOMINGOS D.S. MENESES, PATRICK ECHEGUT, CEMHTI-CNRS, Orleans, France, EMMANUEL LECOMTE, Saint-Gobain Recherche, Aubervilliers, France — The optical properties of common silicate glass compositions are well known at room temperature. However, their radiative properties and structural evolution of these glasses with temperature are still largely unexplored. In this work we have measured the emissivity of a set of iron doped and undoped silicate and borosilicate glasses over an unprecedented temperature (up to 1700 K) and spectral range ( $40 - 20000 \text{ cm}^{-1}$ ). This was achieved by means of a home-made apparatus composed of a  $\text{CO}_2$  laser as the heat source, a black-body reference and two spectrometers. The optical functions were assessed using a dielectric function model [1], and the structure and dynamics of the glassy network, as well the absorption of iron species in different redox states were evidenced. We believe that these new data will help to understand the heat transfer in molten silicates.

[1] D. D. S. Meneses, G. Gruener, M. Malki, and P. Echegut, *J. Non-Cryst. Solids* **351**, 124 (2005)

Cristiane N. Santos  
CEMHTI-CNRS, Orleans, France

Date submitted: 21 Nov 2009

Electronic form version 1.4