FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG
TECHNISCHE FAKULTÄT

WW3

Arbeitsgruppe /Group	Glass
Betreuer/ Supervisor	Prof. Dr. Dominique de Ligny
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Sprache / Language	English
Art / Type	Masterarbeit
Dauer / Duration	MA-Arbeit 840 h in 6 Monaten

Thema / Topic

Towards extra clear glasses, evolution of local defects in glasses with redox melting conditions.

Einleitung / Introduction

Very small quantities of dissolved transition metals can have very strong effect on the color of the glasses. These colorations are very sensitive with the redox state of the element dissolved in the glass. To reduce energetical and environmental impacts of furnaces, glass manufacturers are moving toward pure oxygen combustion. If redox effect are well establish for high concentration they are still to be determined when transition metals contaminant are at the ppm range. This fundamental better knowledge is key to the synthesis of extra clear glasses.

Durchzuführende Arbeiten/Deliverables

Glass synthesis with different transition metal as dopant
Thermal treatment of the glasses with different Redox conditions
Effect on the overall glass structure
Measurement of the redox properties using absorption and luminescence spectroscopy
Thermodynamic modelisation of the obtained results

Literatur / Literature

Gonçalves Ferreira P., D. de Ligny, O. Lazzari, A. Jean, O. Cintora Gonzalez and D.R. Neuville (2013) Photoreduction of iron by a synchrotron X-ray beam in low iron content soda-lime silicate glasses. Chemical Geology, 346, 106-112.

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