

# Carbonated Mantle: Modelling the effect of carbonated melts on mantle melting and conductivity

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## **CARBONATED-SILICATE MELTS**

### **MODELLING THEIR EFFECT ON MANTLE CONDUCTIVITY**

#### **ABSTRACT**

The effect of carbonated melts are observed to have significant deepening of the solidus and high conductivity as a function of CO<sub>2</sub> concentration in the melt. In this study parameterising these two effects, and present a model that determines mantle melt fraction and bulk hydration from conductivity observations, using the melting models of McKenzie and Bickle (1988), Katz et al. (2003), and Hirschmann (2010). This model is applied to conductivity data of Key et al. (2013) and (Wannamaker et al. 2008) for the East Pacific Rise and the Basin and Range, Colorado, respectively. Our interpretations of melting and hydration, are in agreement with those posed by the Key et al. (2013) and Wannamaker et al. (2008).

**KEYWORDS : CARBONATED MELT, CARBONATE CONDUCTIVITY, CARBONATE SOLIDUS DEPRESSION**

## TABLE OF CONTENTS

Carbonated-Silicate Melts .....	i
Abstract .....	i
Keywords : Carbonated melt, Carbonate conductivity, carbonate solidus depression.....	i
List of Figures and Tables (Level 1 Heading).....	2
Introduction (Level 1 Heading).....	3
Background .....	6
Effect of carbonated-silicate melt.....	6
Solidus depression .....	6
Carbonated Peridotite melt Conductivity.....	7
Mantle Melting .....	8
Mantle conductivity .....	9
Methods.....	13
Modeling Effects of CO <sub>2</sub> .....	13
solidus depression by effect of CO <sub>2</sub> concentration .....	13
Modelling carbonated silicate conductivity by effect of CO <sub>2</sub> concentration.....	13
Modeling the Mantle Properties .....	15
observations and Results .....	16
Solidus Depression model.....	16
Carbonated-silicate melt conductivity model.....	19
Bulk Conductivity model.....	20
Discussion .....	21
Discussion of Models Presented.....	21
Solidus Depression model.....	21
Carbonated-silicate melt conductivity model.....	22
Mantle Model .....	23
GEOPHYSICAL IMPLICATIONS .....	25
Conclusions .....	30
Acknowledgments .....	30
References .....	30
Appendix A .....	34

## LIST OF FIGURES AND TABLES

Figure 1: Partitioning of bulk melt fraction between immiscible silicate and carbonated melt taken from Hasterok (2014). Vertical axis is the respective fraction.....	11
Figure 2: Plot of sample melt preexponential factor $\sigma_0$ against sample CO <sub>2</sub> concentration. Results of Tyburczy and Waff (1983), dolomite sample of Yoshino et al. (2012a), Pommier et al. (2010), and Gaillard et al. (2008) are plot for comparison.....	14
Figure 3: a) Model of peridotite solidus depression as a function of CO <sub>2</sub> in melt and pressure, shown in red. Original model of Dasgupta et al. (2013) is shown for comparison. b) Plot of Katz et al. (2003) melting solidus as a function of pressure and depth for varying bulk H <sub>2</sub> O, CO <sub>2</sub> compositions. Models of Hirschmann (2010) and McKenzie and Bickle (1988) are shown in grey for comparison.....	18
Figure 4: Conductivity model of data of Yoshino et al. (2012a) for carbonated silicate melt as a function of temperature and CO <sub>2</sub> concentration in melt. Original data of Yoshino et al. (2012a) is plot as crosses. For comparison, melt conductivity data of Pommier et al. (2010), Yoshino et al. (2010), and Gaillard et al. (2008) have been plot as circles, points, and stars respectively, by the Arrhenius relationship.....	19
Figure 5: Conductivity Hashin-Shtrikman bounds for the three melting functions at isobaric pressure, as a function of bulk water content. Conductivities of Hydrous olivine, hydrated carbonated melt, silicate melt from Pommier et al. (2010), and anhydrous olivine are plot for comparison.....	20
Figure 6: Comparison of models of melt fraction at depth with the effect of 100ppm bulk CO <sub>2</sub> (green plot) and without (grey plots).....	22
Figure 7: Conductivity depth profile taken form Wannamaker et al. (2008). Red and blue are assigned to E-W and N-S measurements. Dashed line represents upper and lower bound of conductivity range at that depth.....	27
Figure 8: Manlte properties Olivine hydration (black line indicates saturation), bulk water content, and melt fraction, as a function of depth plot using melting method: a)Katz et al. 2003, b)Hirschmann 2010, c)McKenzie and Bickle 1988. Dashed line represents range calculated with the upper lower HS bound on conductivity, solid line represents range calculated with the upper HS bound on conductivity. Red and blue are assigned to E-W and N-S measurements.....	29