

## **HIGH WATER AND HYDROGEN PRESSURE EFFECTS ON VISCOSITY OF MAGMATIC MELTS**

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The experimental investigation of the viscosity of water and hydrogen-bearing magmatic melts from acidic to ultrabasic compositions have been used to consider some features of water and hydrogen interacting with magmatic melts. The viscosity of mentioned melts have been determined at fluid pressures up to 500 MPa and in the temperature range 900-1500°C, using unique high pressure viscosimeter. The results indicate that the chemically dissolved water (hydroxyl OH-) decreases considerably the viscosity of magmatic melts in the acidic to basic series and involves profound structural changes in such melts - depolymerization. This effect decreases with increasing of melt basicity and is opposite for ultrabasic melts. Physically dissolved water inconiderably (such Ar) decreases of the viscosity of magmatic melts from acidic to ultrabasic composition with increasing pressure. High hydrogen pressure effect on viscosity of magmatic melts depends from melt composition: H<sub>2</sub> is chemically dissolved (as hydroxyl OH-) in melts containing elements of variable valency (Fe, Co, Ni) and the effect of such form of H<sub>2</sub> is the same to chemically dissolved water; H<sub>2</sub> is physically dissolved (as: H<sub>2</sub>, H+H) in melts without such elements and the effect of last form of H<sub>2</sub> on viscosity of magmatic melts is the same to high Ar pressure effect. But this effect is not so high compare to water because H<sub>2</sub> is much less soluble. (We acknowledges to the support of RFBR, grant No 9705-64448 )