

Inclusion of P_2O_5 and VO_x in the viscosity model for molten slag in multicomponent oxide systems

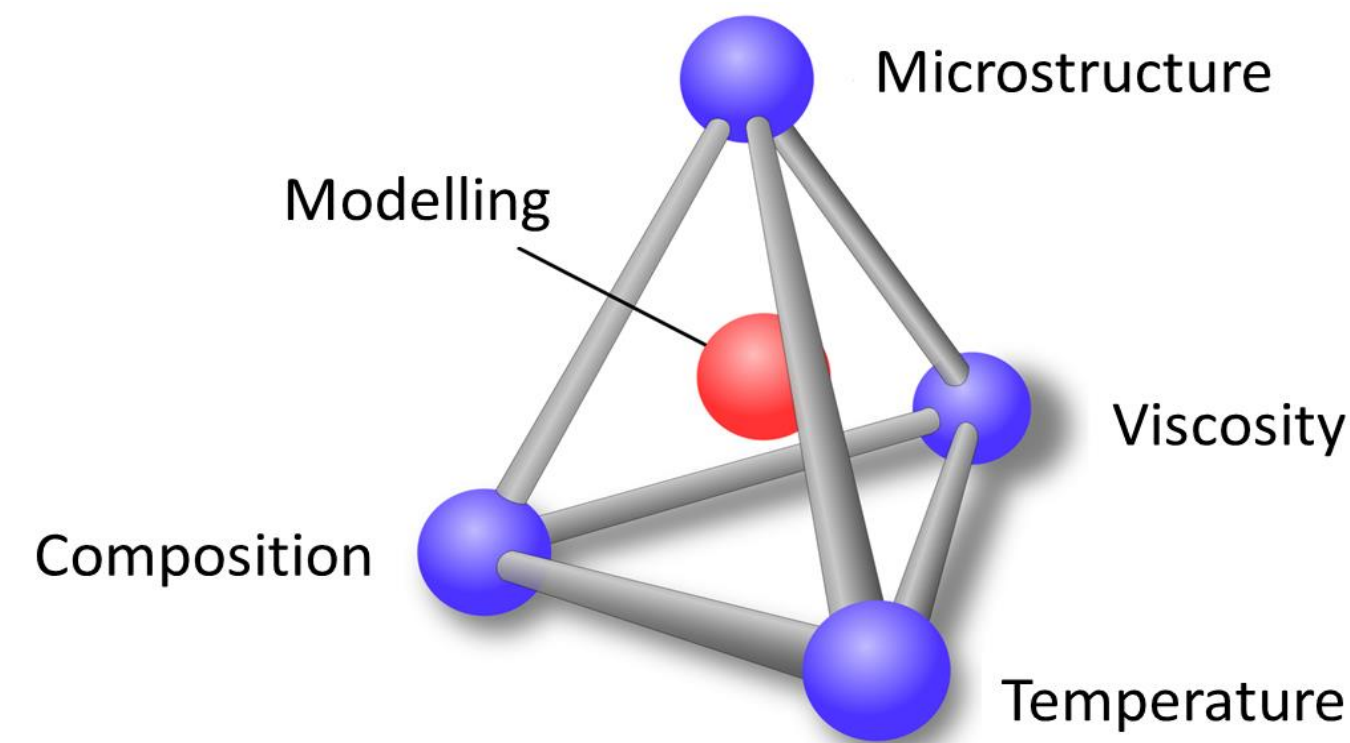
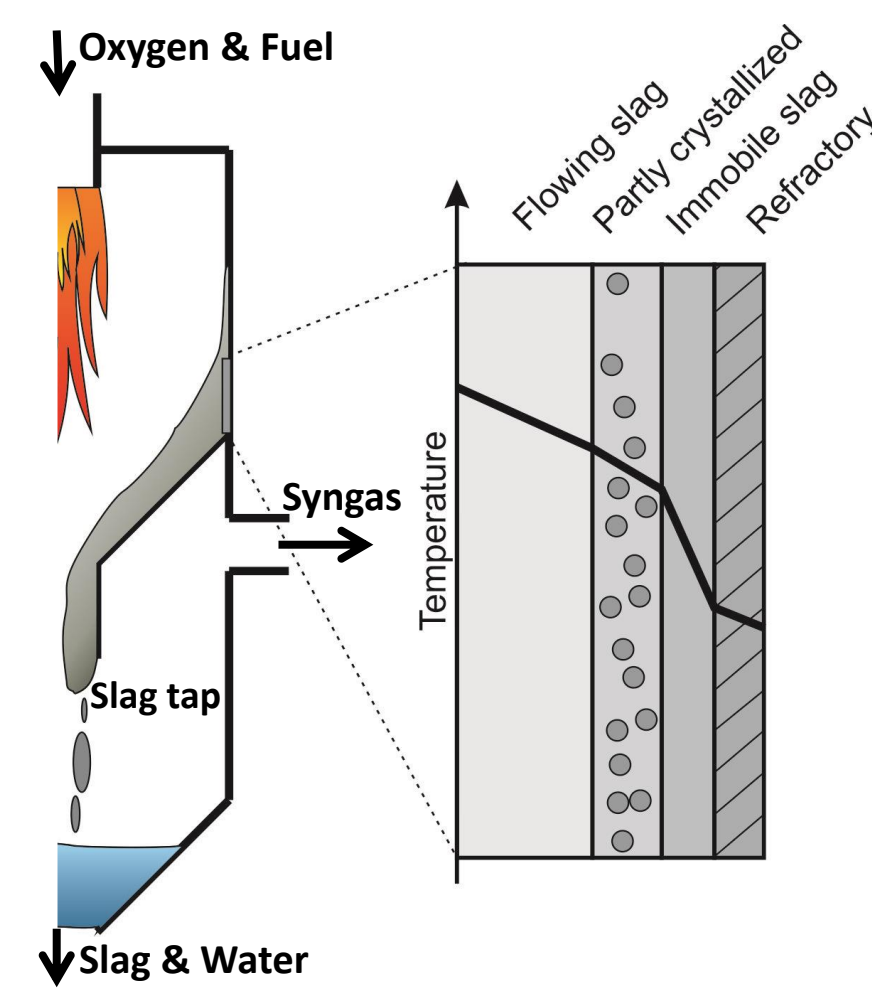
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INTRODUCTION & AIMS



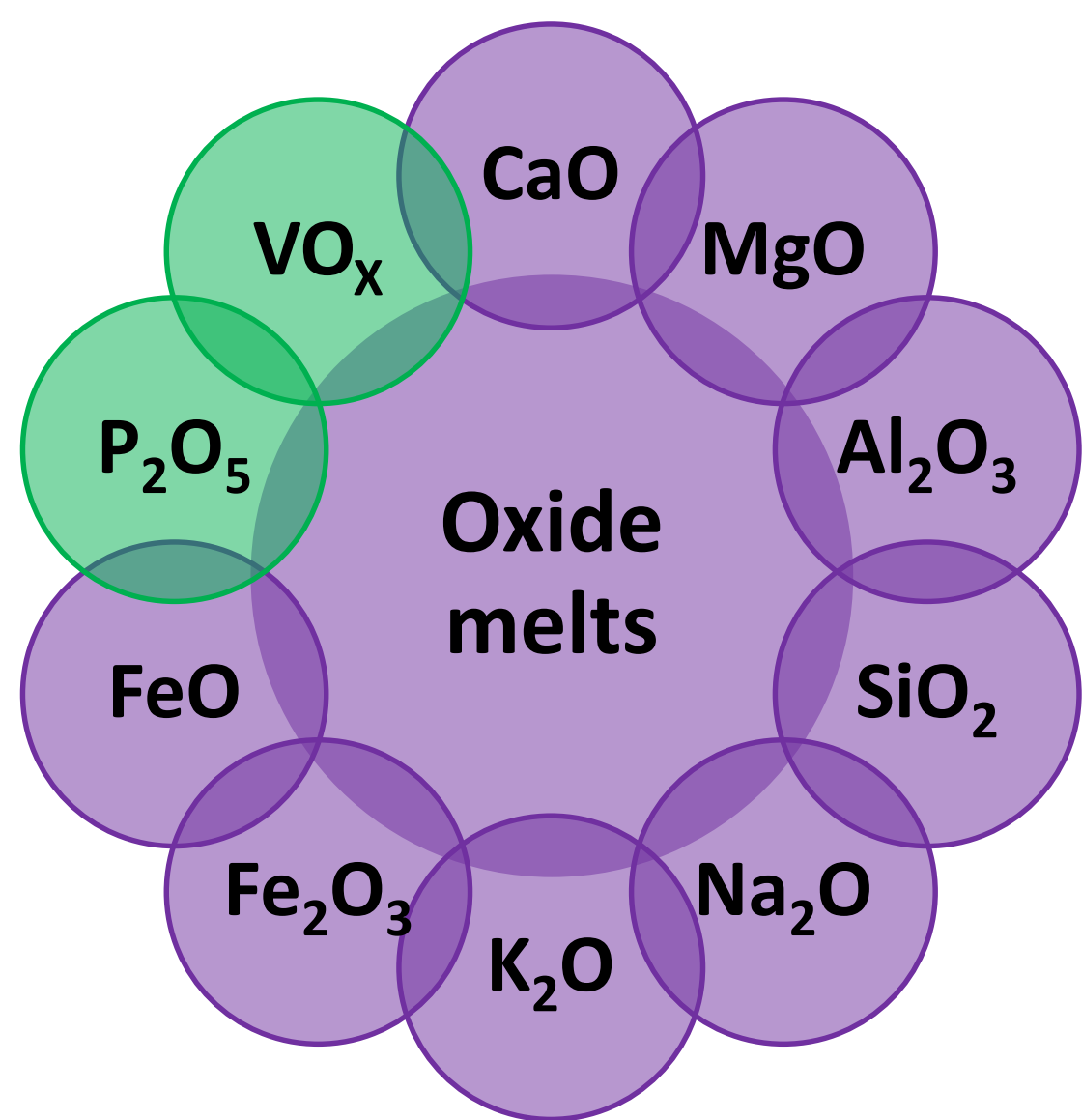
Extending the viscosity model and database to cover the P_2O_5 - and VO_x -containing multicomponent oxide melts

CONCLUSIONS

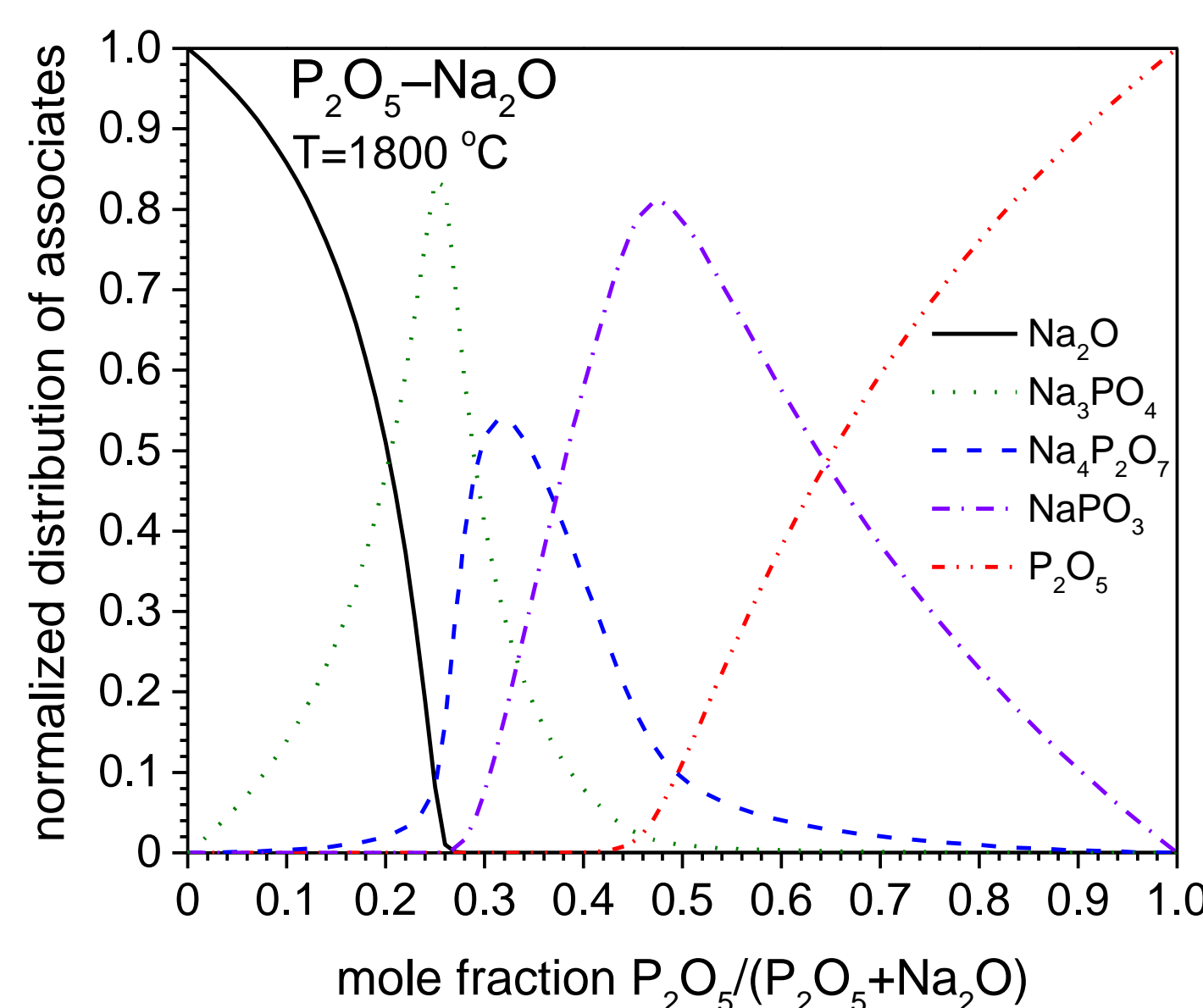
- A structurally-based viscosity model is developed.
- Viscosity is described as a function of temperature, composition and oxygen partial pressure.
- Some additional clusters may need to be introduced due to the potential interconnection of relevant associate species.
- The model parameters should be further assessed when new reliable experimental data are available.

APPROACH OF THE VISCOSITY MODELLING

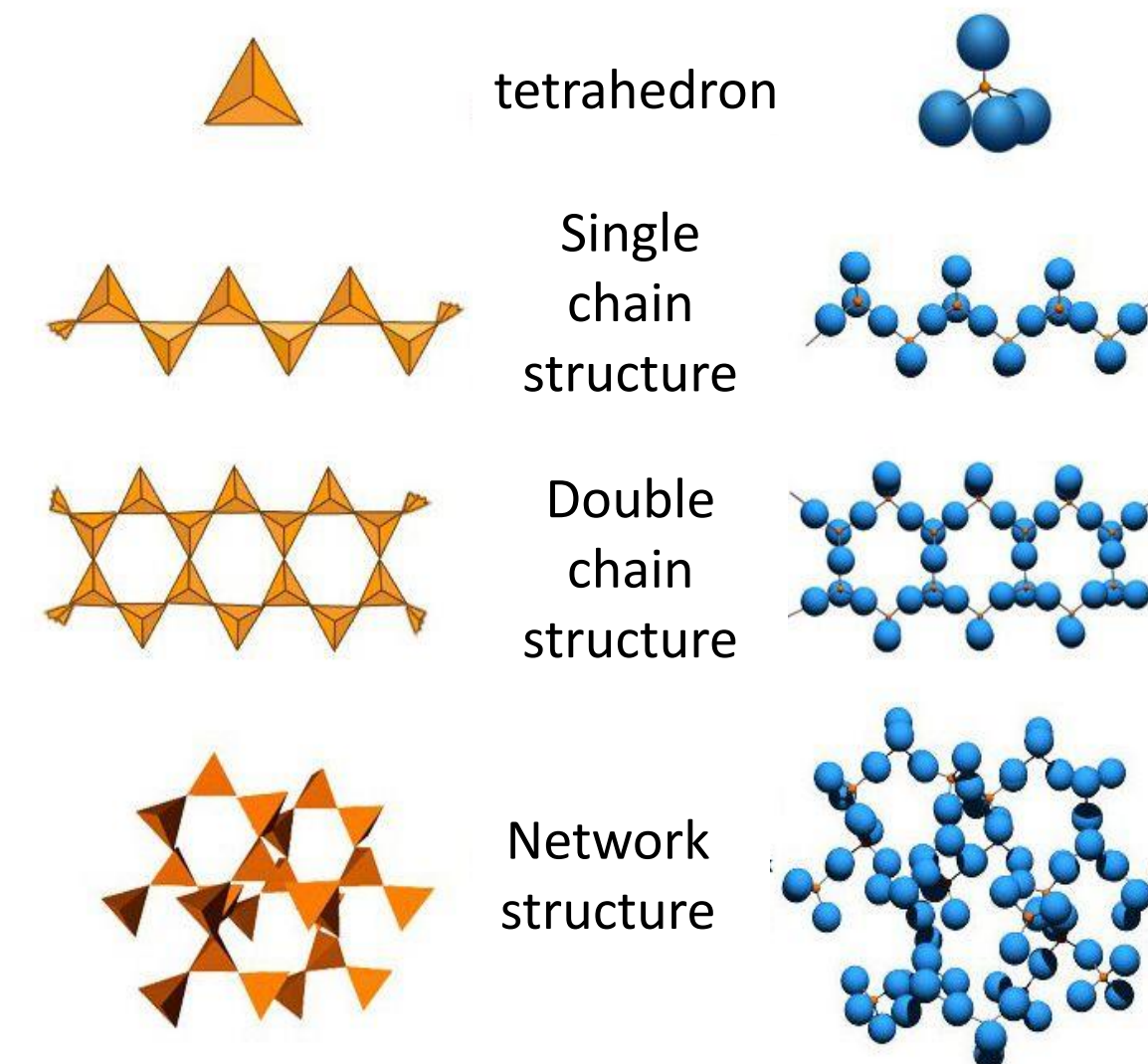
Composition
Temperature



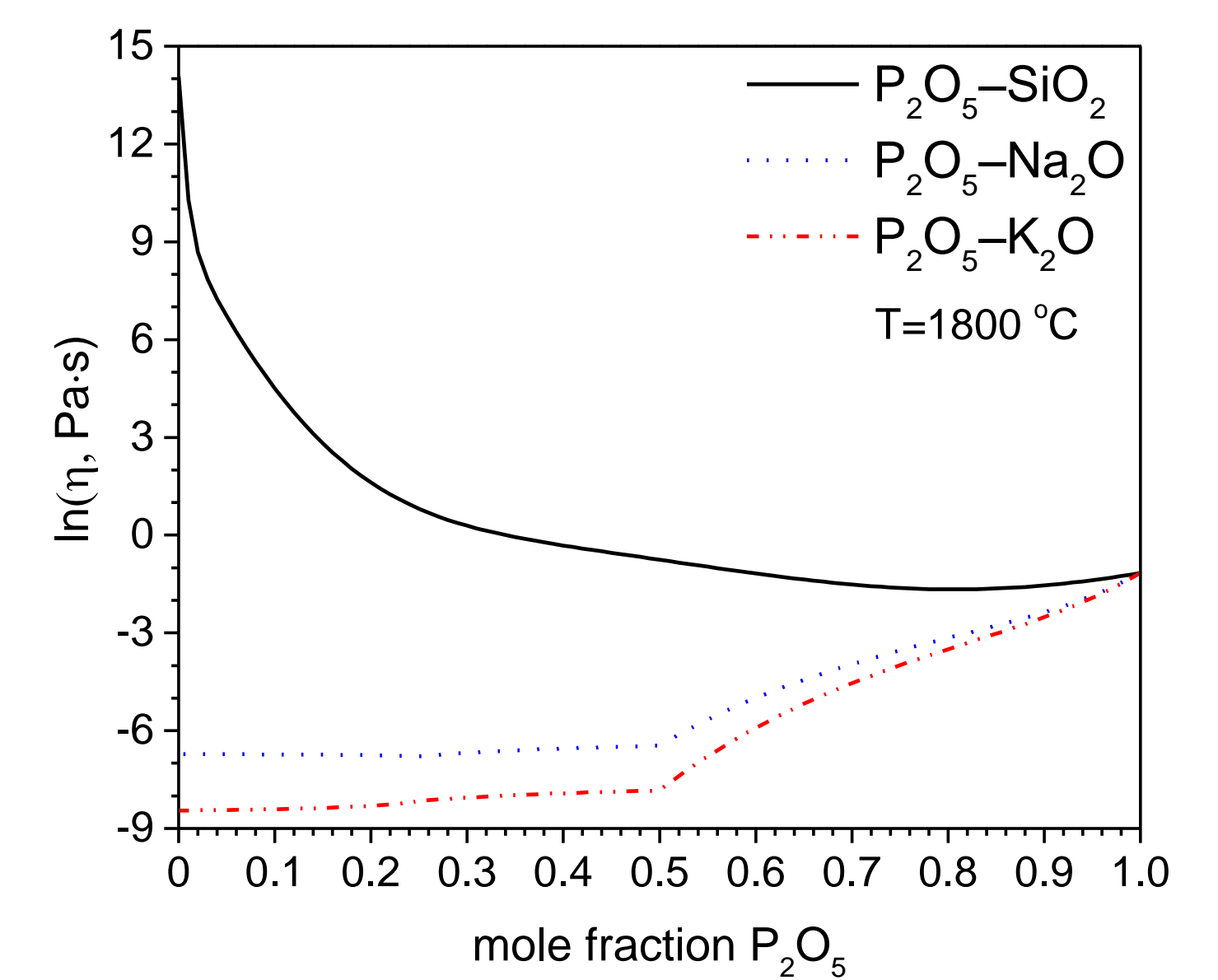
Associate
species



Structure

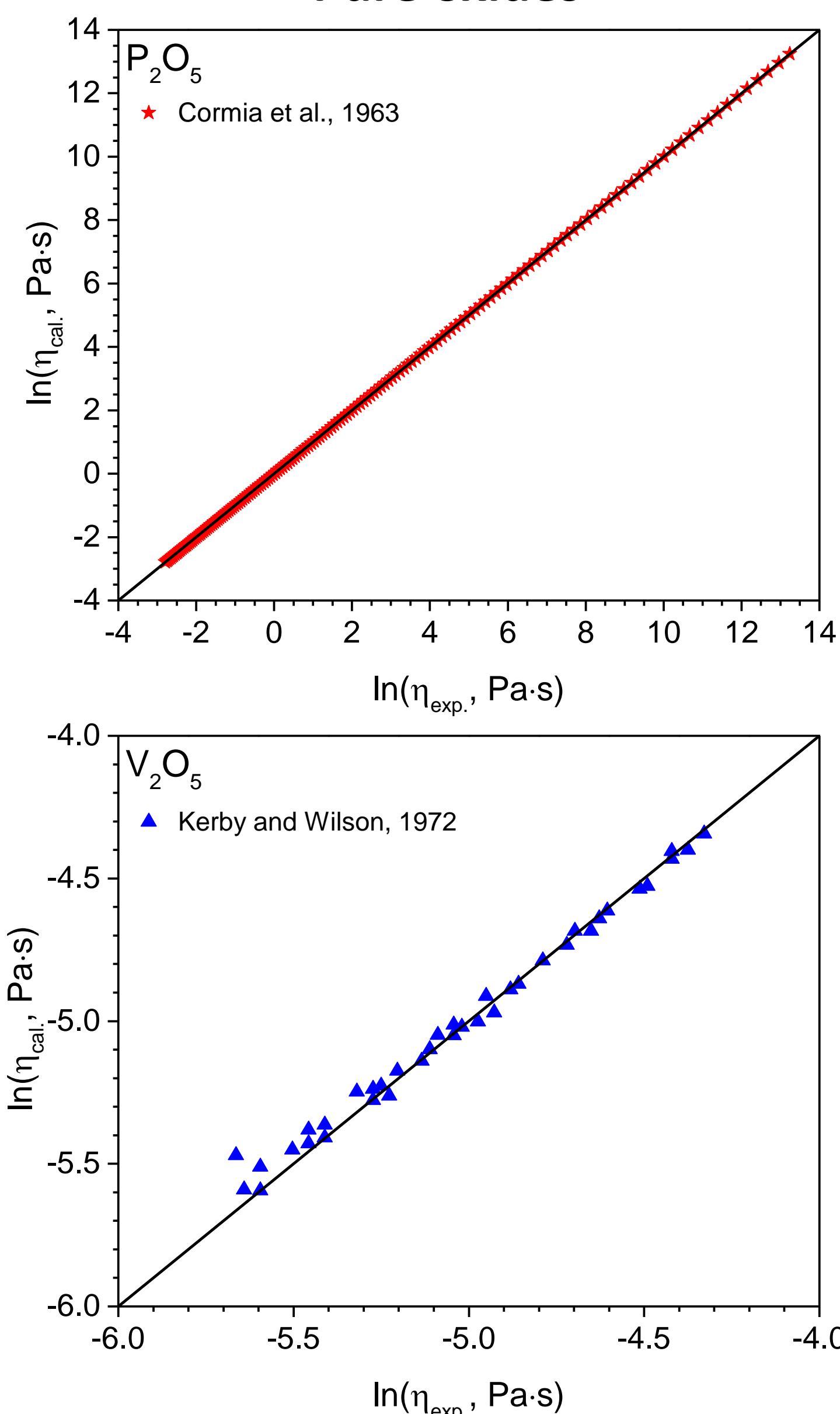


Viscosity

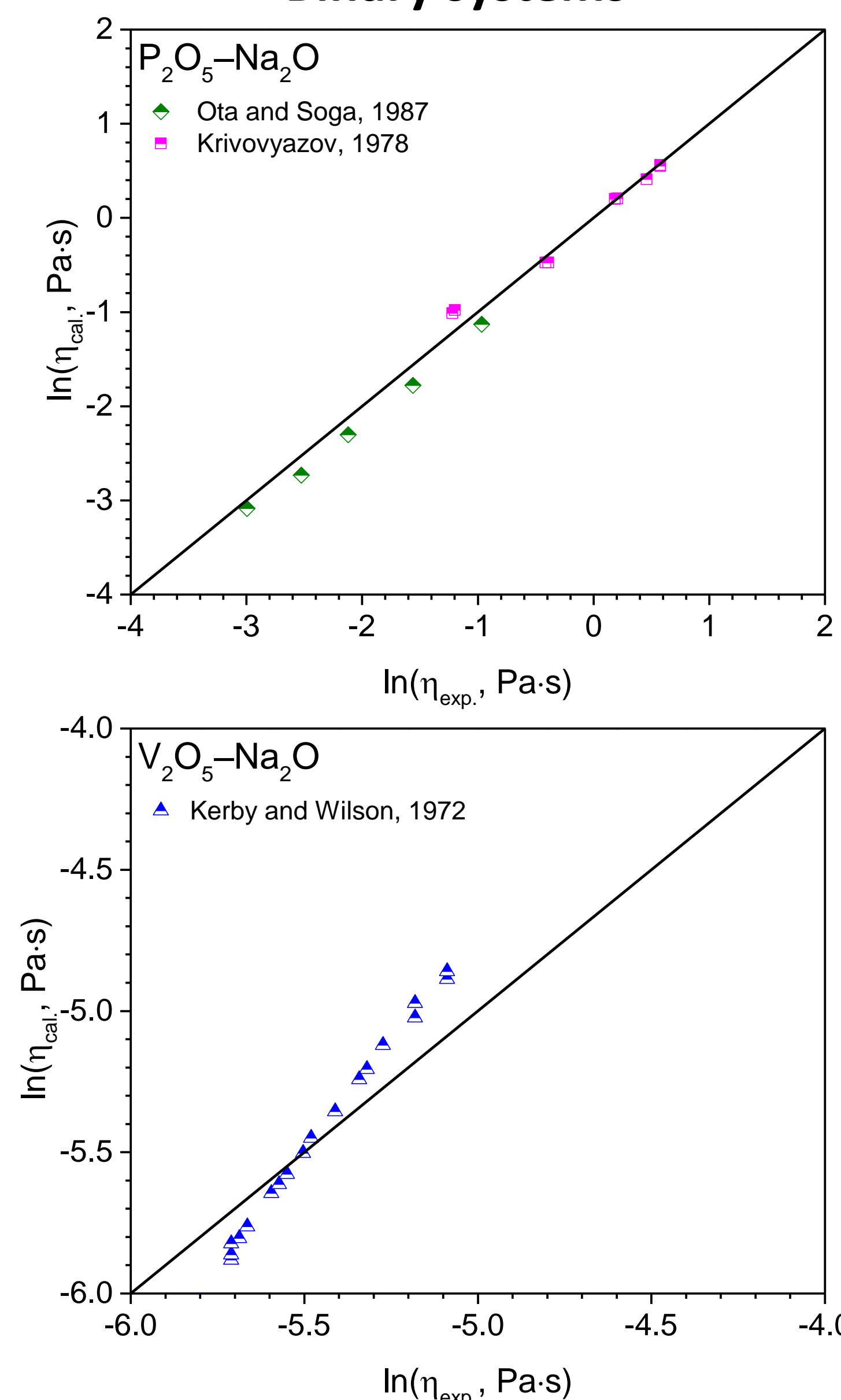


RESULTS AND MODEL PERFORMANCE

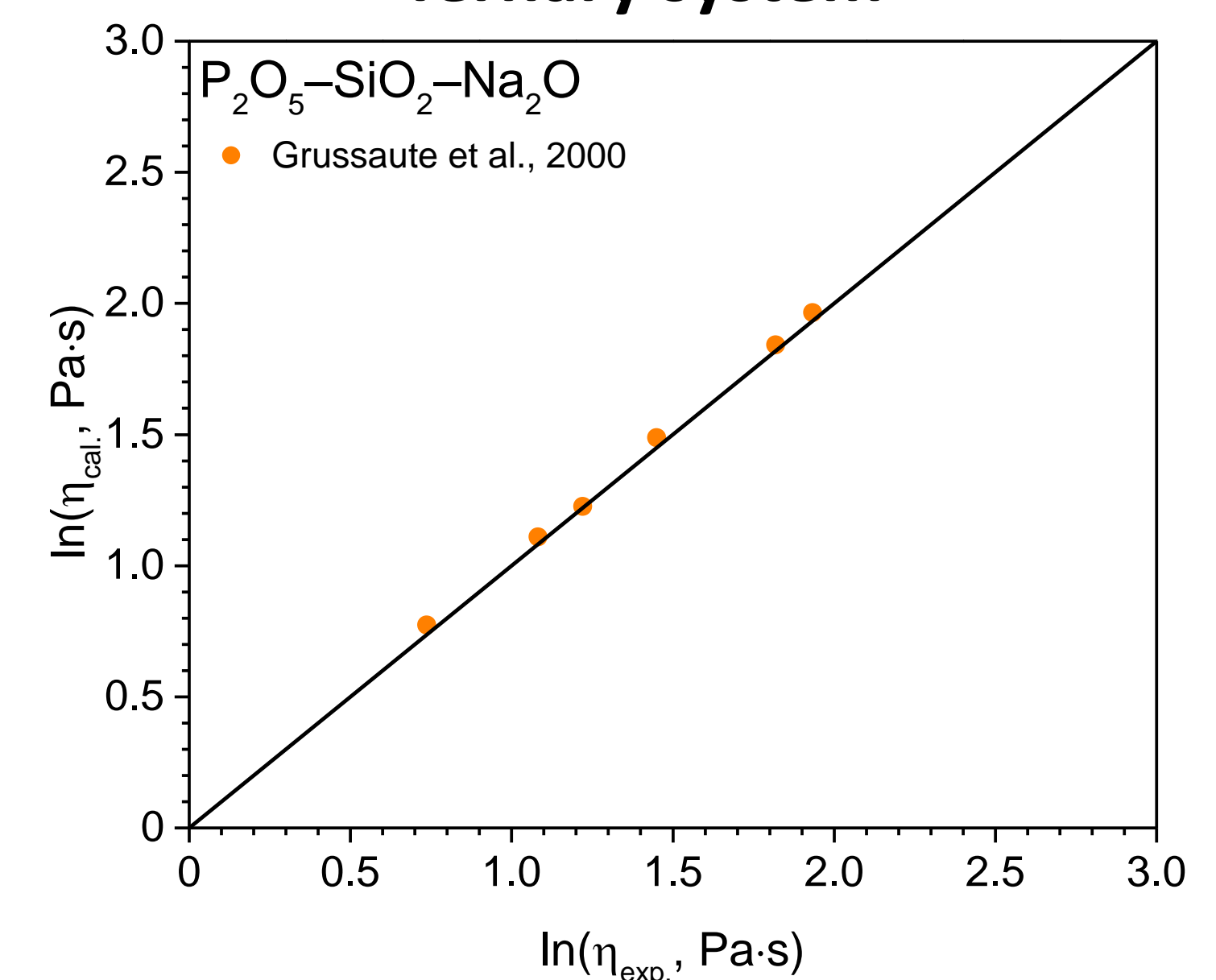
Pure oxides



Binary systems



Ternary system



The structural features of P_2O_5 -containing melts are described by using a larger cluster $(PO_{2.5})_{20}$ due to the self-polymerisation, in combination with the associate species calculated from a self-consistent thermodynamic database. Although V_2O_5 is an analogue of P_2O_5 , no additional clusters are required to describe the VO_x -induced structural change, which is supported by the low magnitude of viscosity values of VO_x melts.

ACKNOWLEDGEMENTS

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