Studying the PEG family

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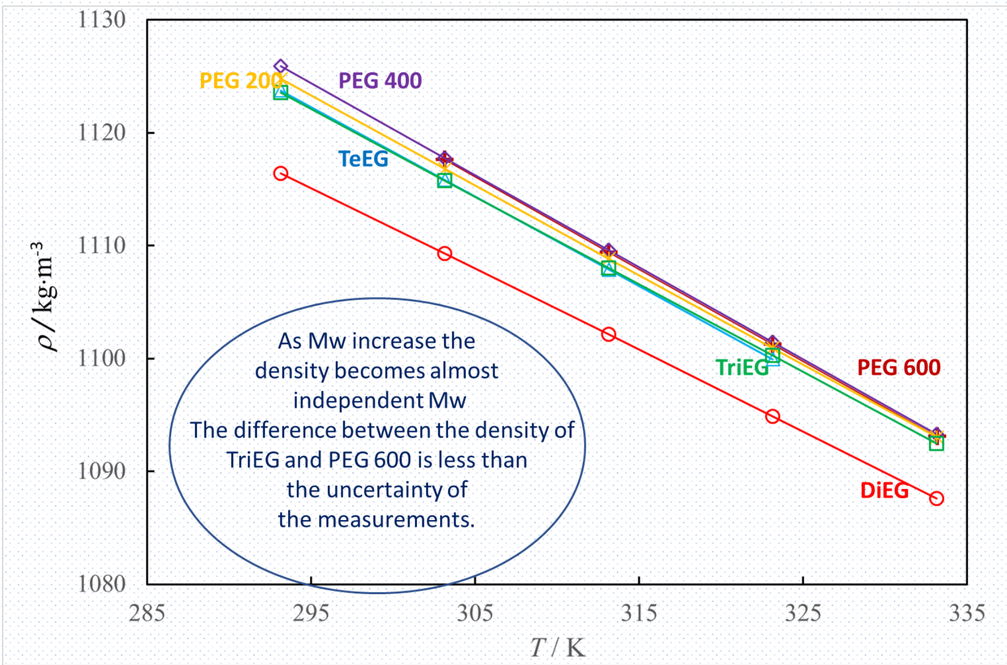
CQE Química Estrutural

09 MET

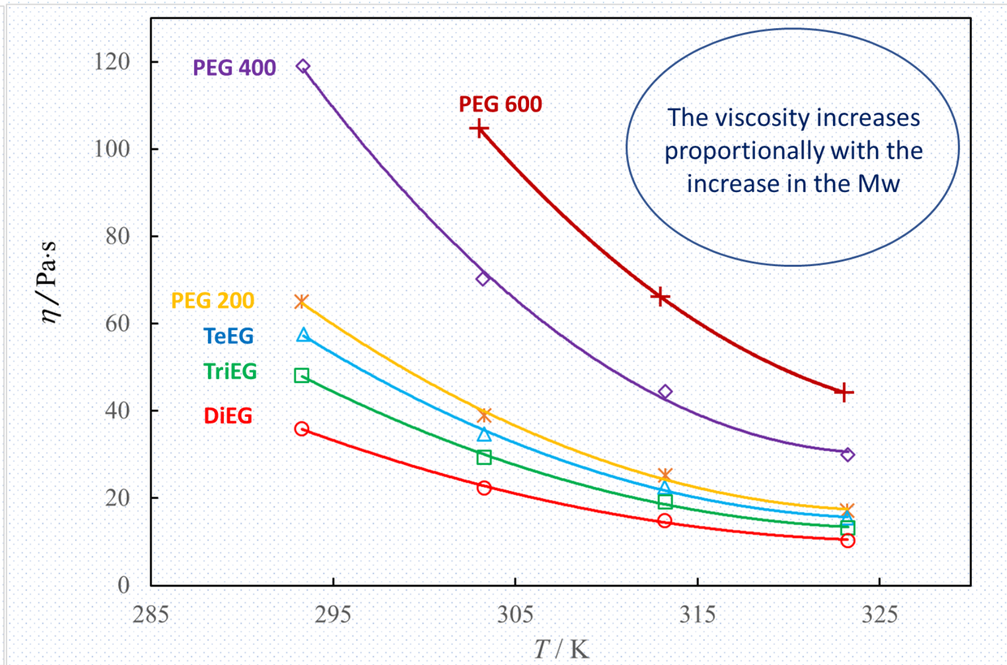
GOAL

Realisation of experimental measurements of thermophysical properties of a homologous series of ethylene (DiEG,TriEG,TeEG) and polyethylene glycols (PEG 600,PEG 400 and PEG 200) and the development of correlation methods.

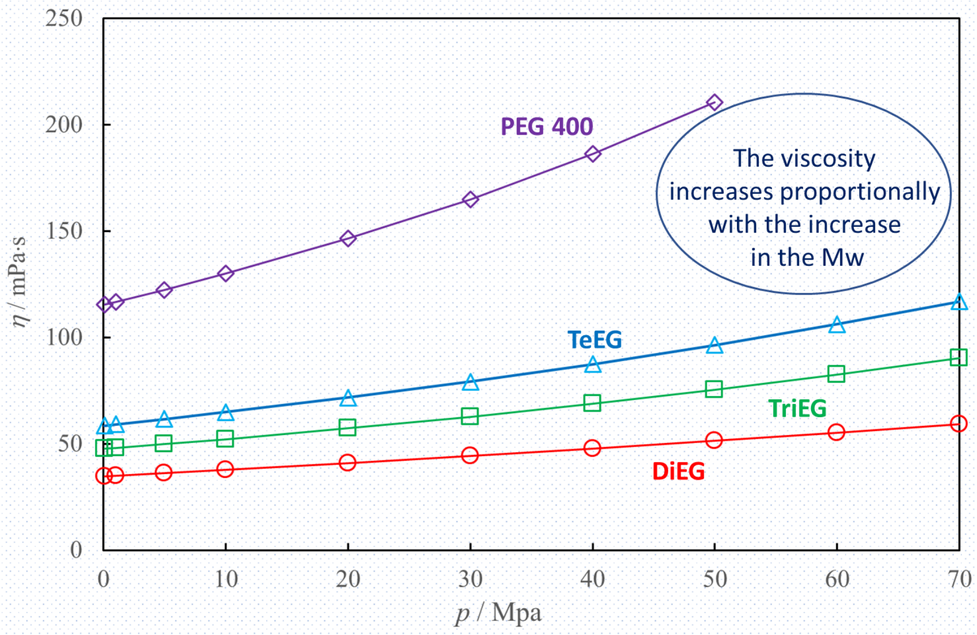
Influence of molecular mass in density at constant pressure



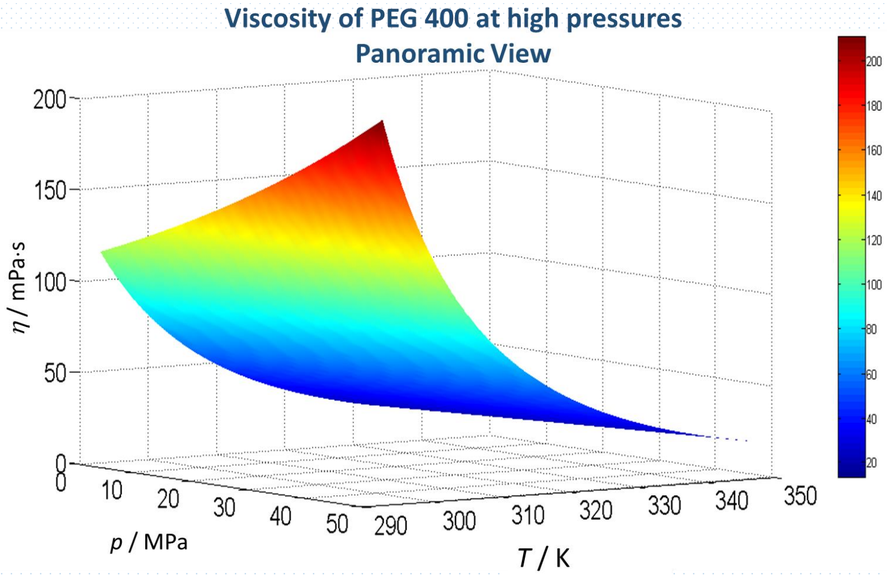
Influence of molecular mass in viscosity at constant pressure



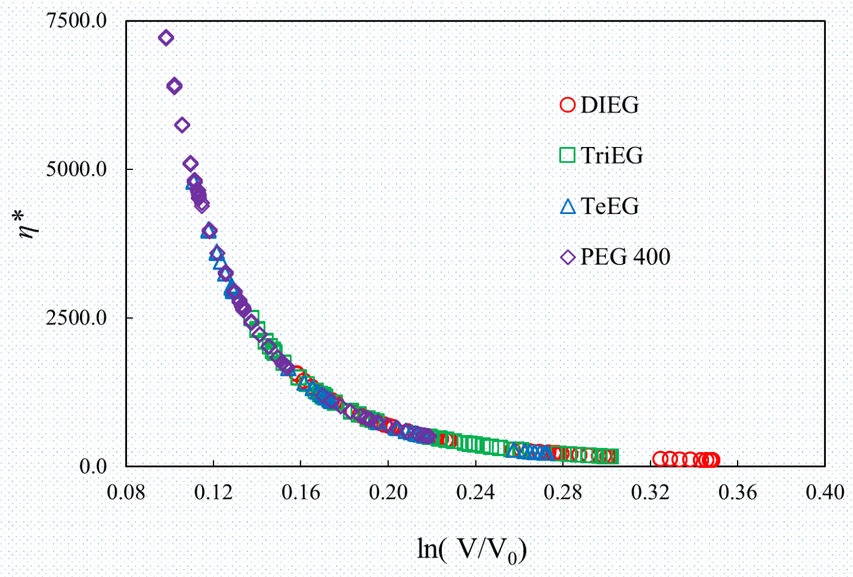
Influence of molecular mass in viscosity when the pressure increases at constant temperature

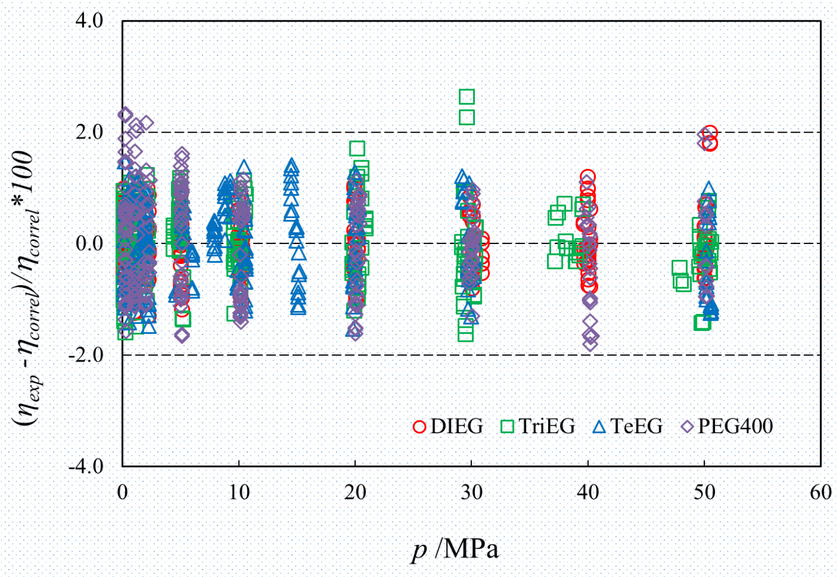


Viscosity of PEG 400 at high pressures Panoramic View



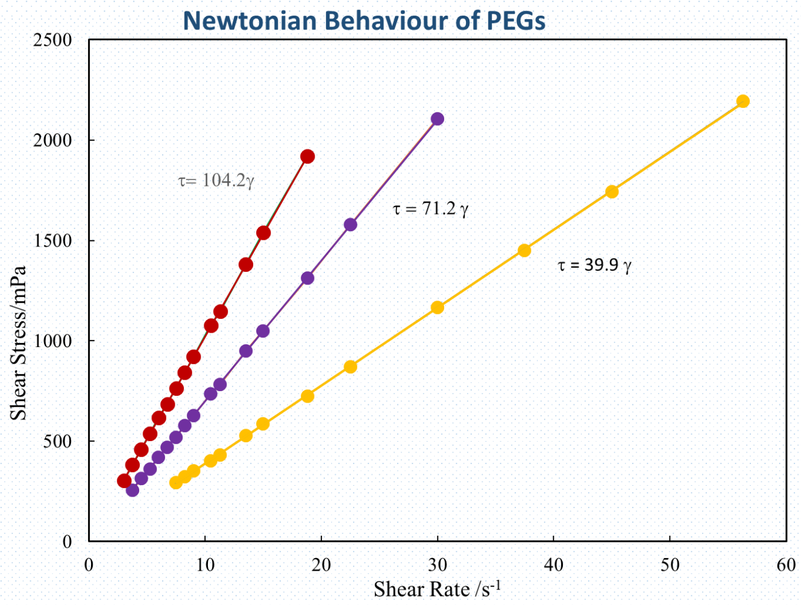
Hard-Spheres Correlation of series of ethylene (DiEG,TriEG,TeEG) and polyethylene glycol (PEG 400)





One the curve, one equation, allow interpolating the viscosity of any ethylene or PEG 400 in the pressure and temperature with accuracy about 2%.

Newtonian Behaviour of PEGs



Work in progress:

- Viscosity and density measurements of PEG 200 at high pressure
- Self-diffusivity measurements of DiEG, TriEG and TeEG.
- Introduction of self-diffusion data in hard-spheres viscosity correlation.
- Analyse the relation of the present results with those obtained before for CO_2 saturated PEG mixtures. Aim: to predict the viscosity of the mixtures.
- Determination of the pressure-viscosity and temperature-viscosity coefficients - important to characterize lubricants.

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References:

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