

Dispersant Optimisation

Functional Fillers for Plastics 2003

Atlanta Georgia

Dr. Chris DeArmitt

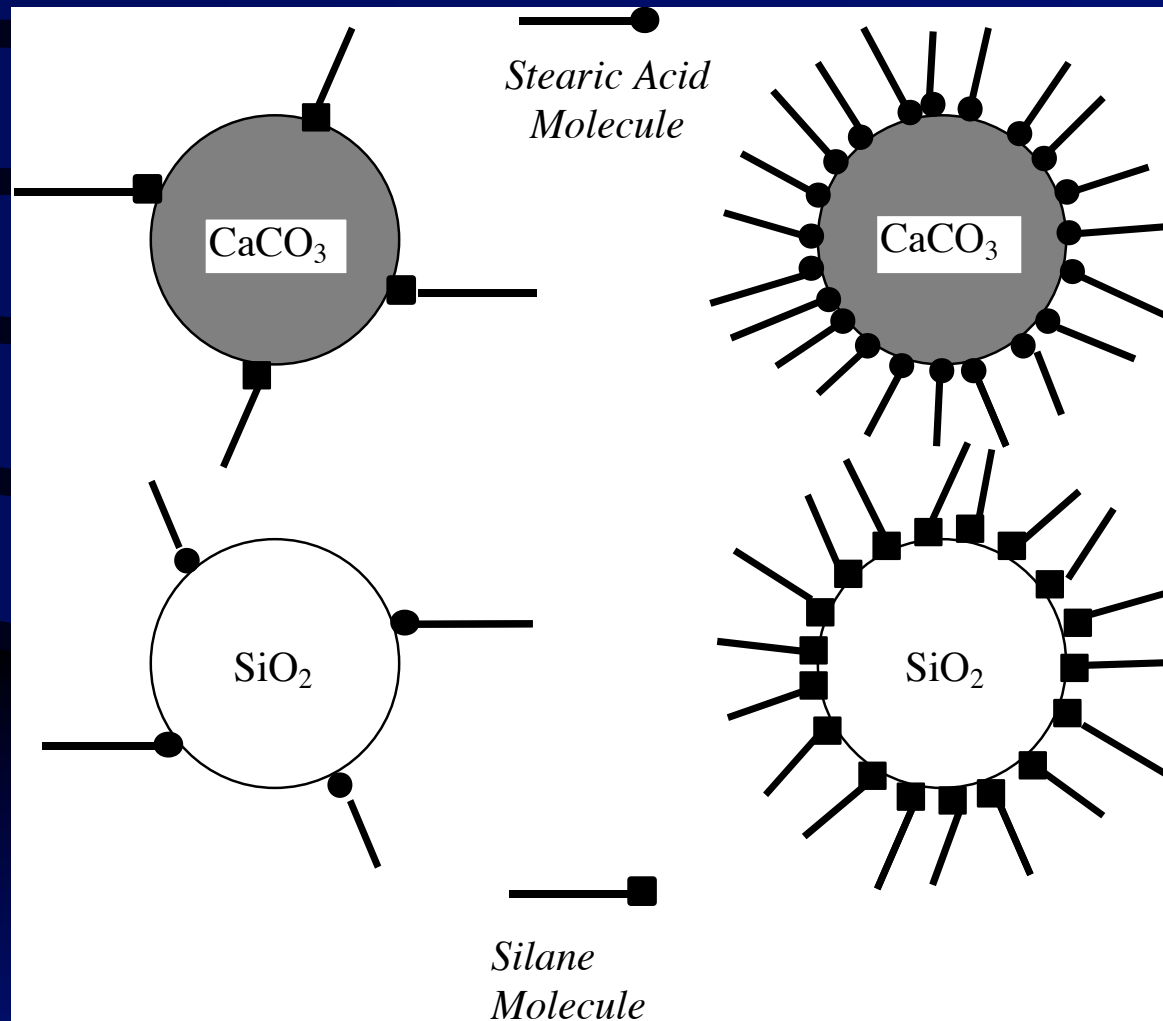
Market Development Manager

BASF Specialty Copolymers

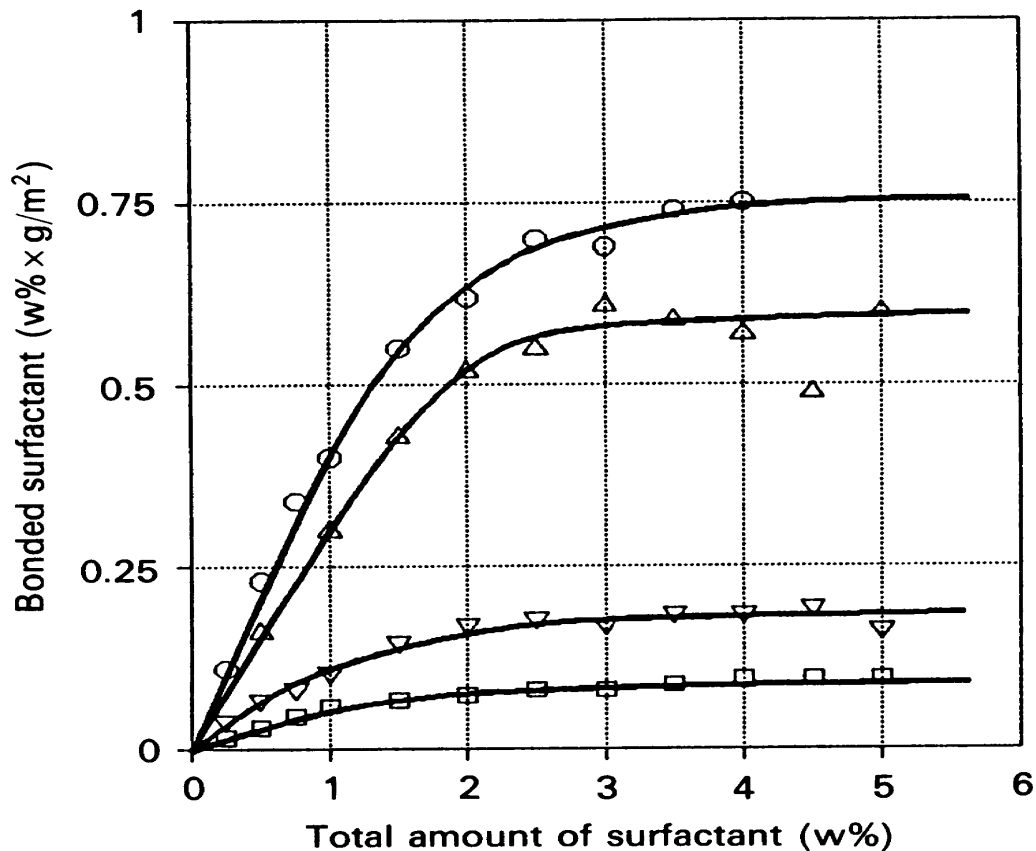
Outline

- What are dispersants? Why do we use them?
- What is the present technology?
- How it can be improved?
- Method for optimising surface treatments
- Conclusions

DISPERSION ADSORPTION

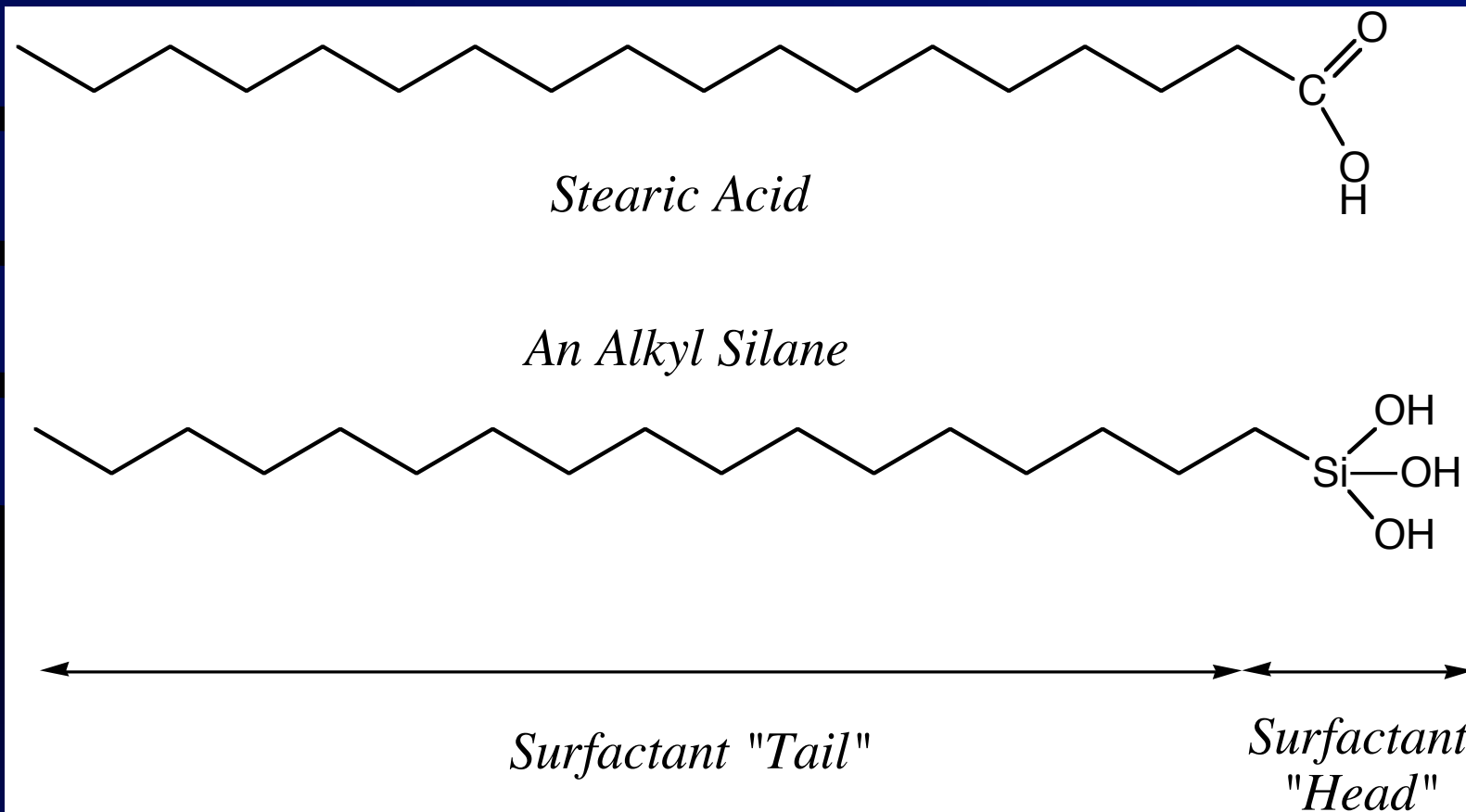


STEARIC ACID ADSORPTION

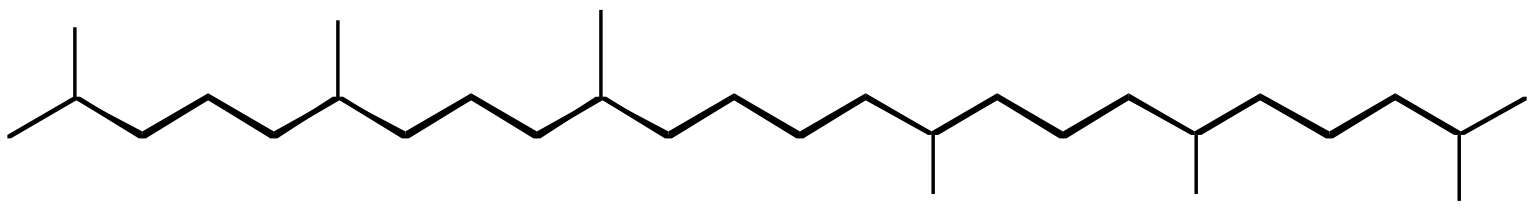


Effect of specific interactions on the amount of adsorbed stearic acid
Bonded stearic acid related to a unit surface for: (○) chalk, (△) marble,
(▽) talc, (□) silica.

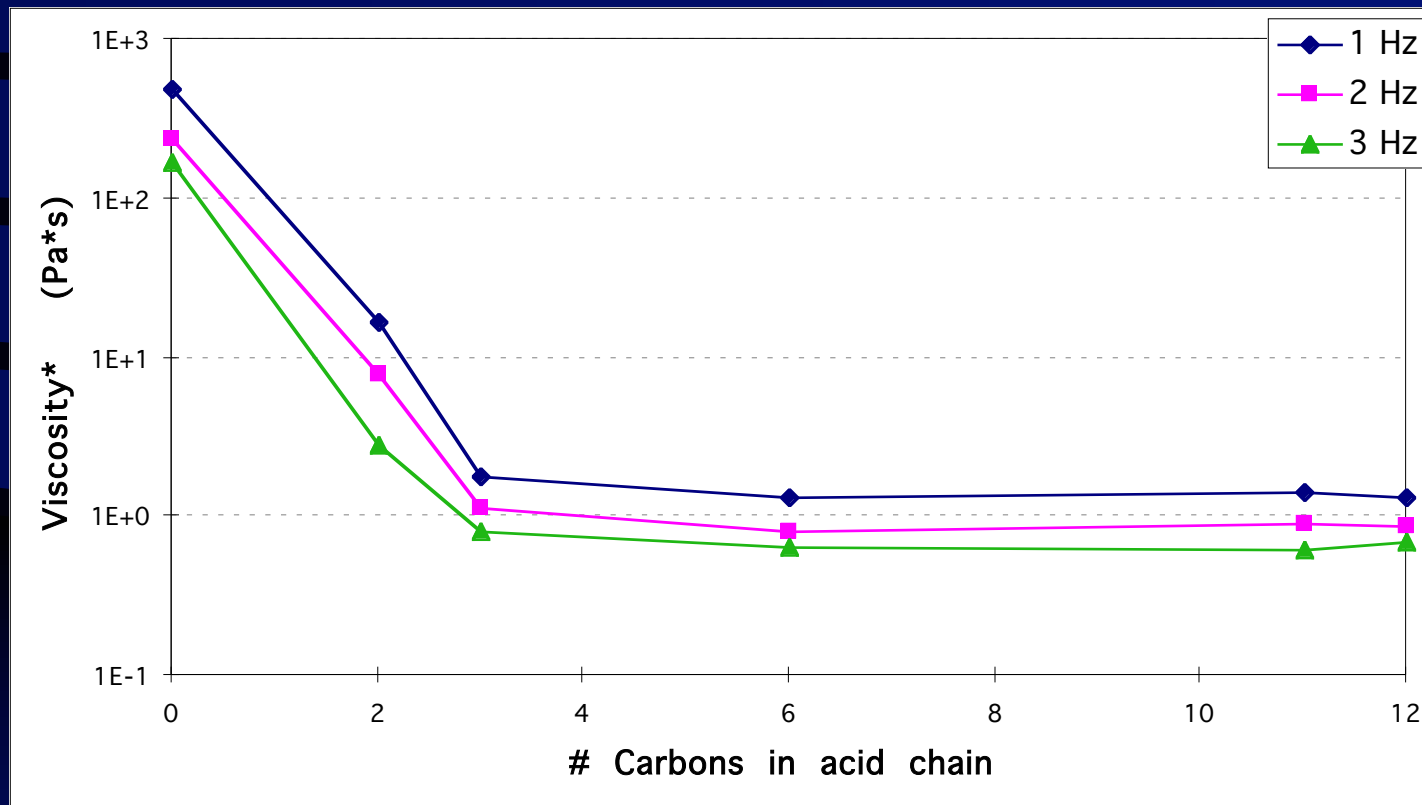
HEAD AND TAIL CONCEPT



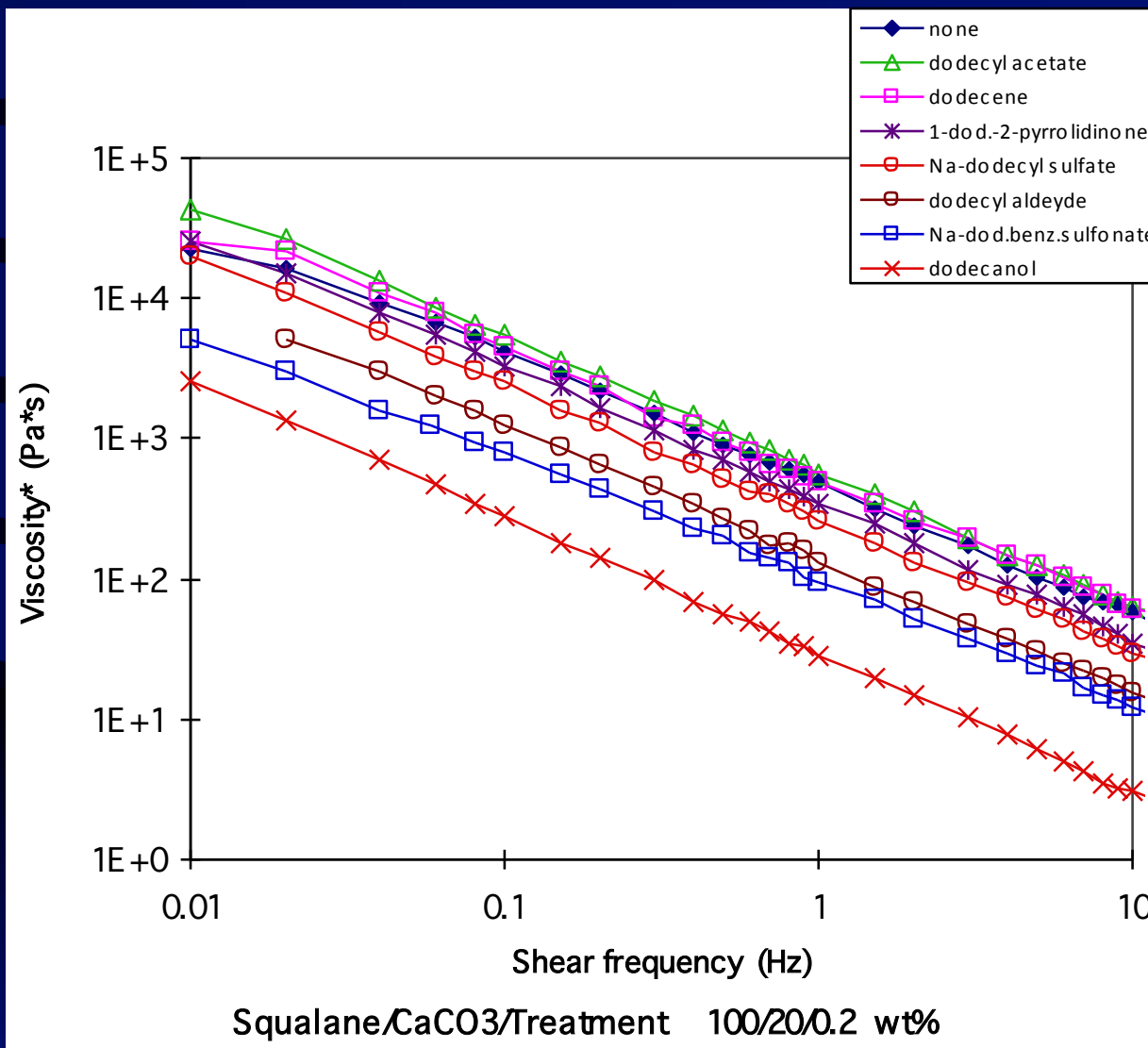
SQUALANE



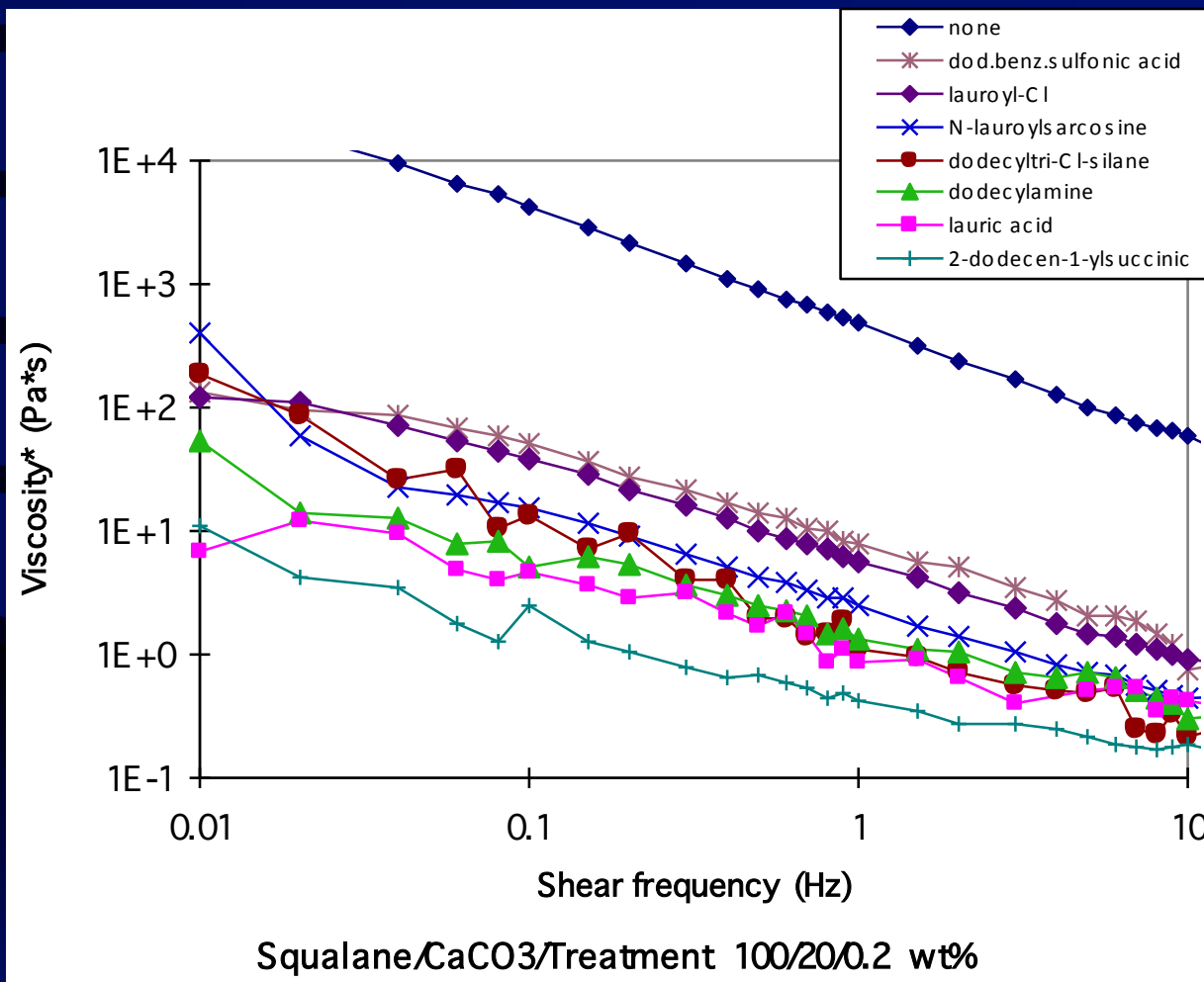
EFFECT OF CHAIN LENGTH ON VISCOSITY



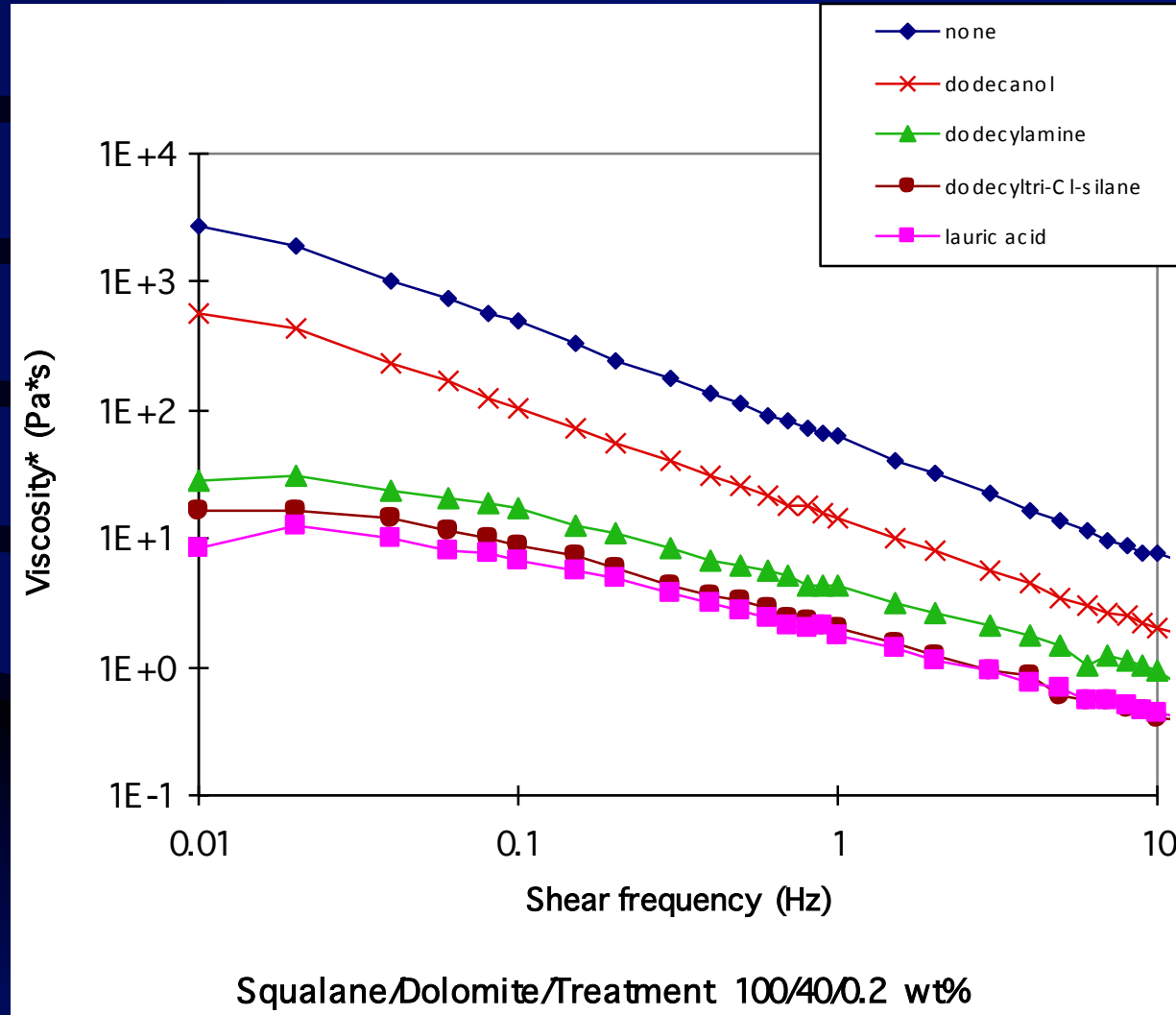
CALCIUM CARBONATE



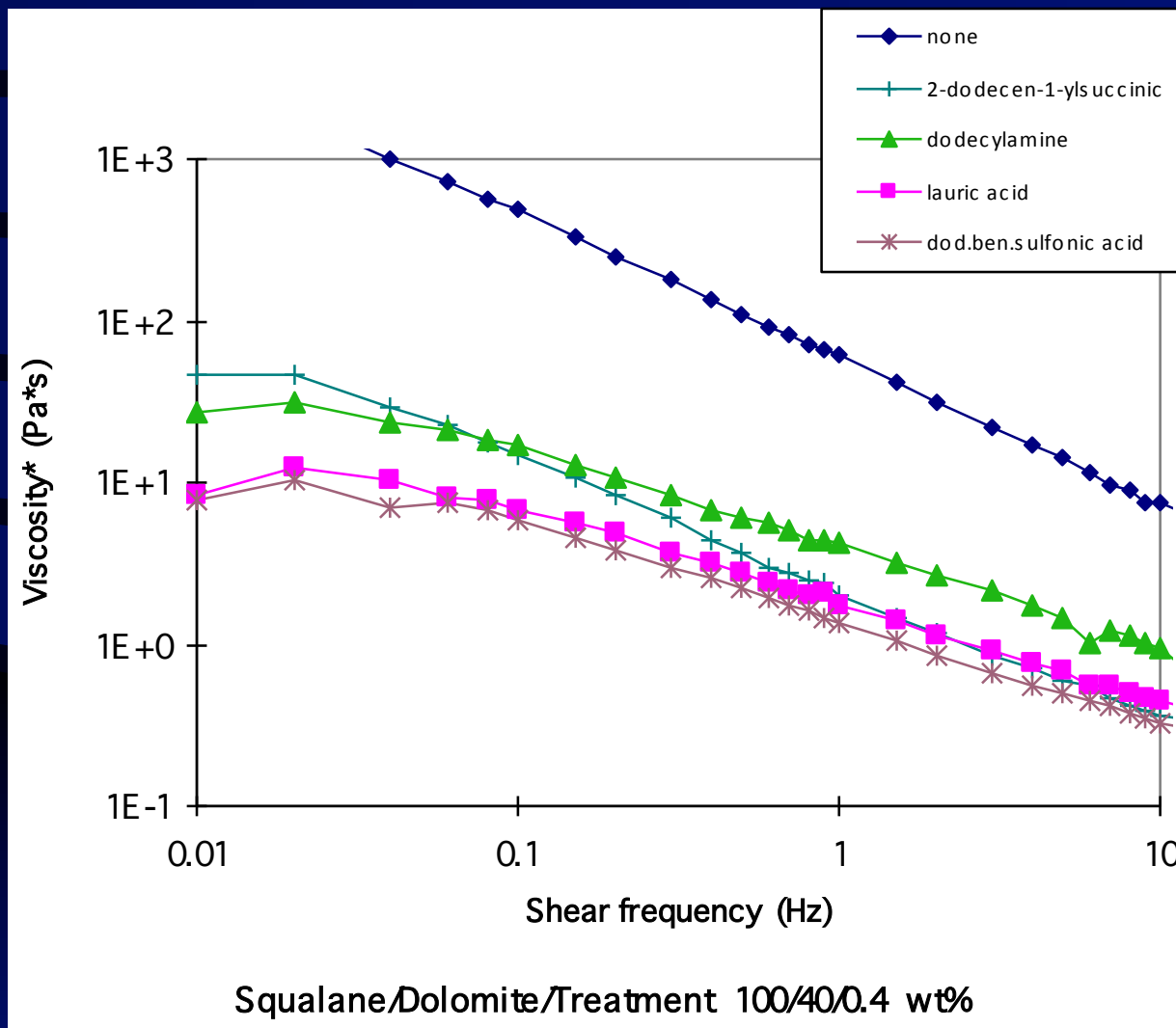
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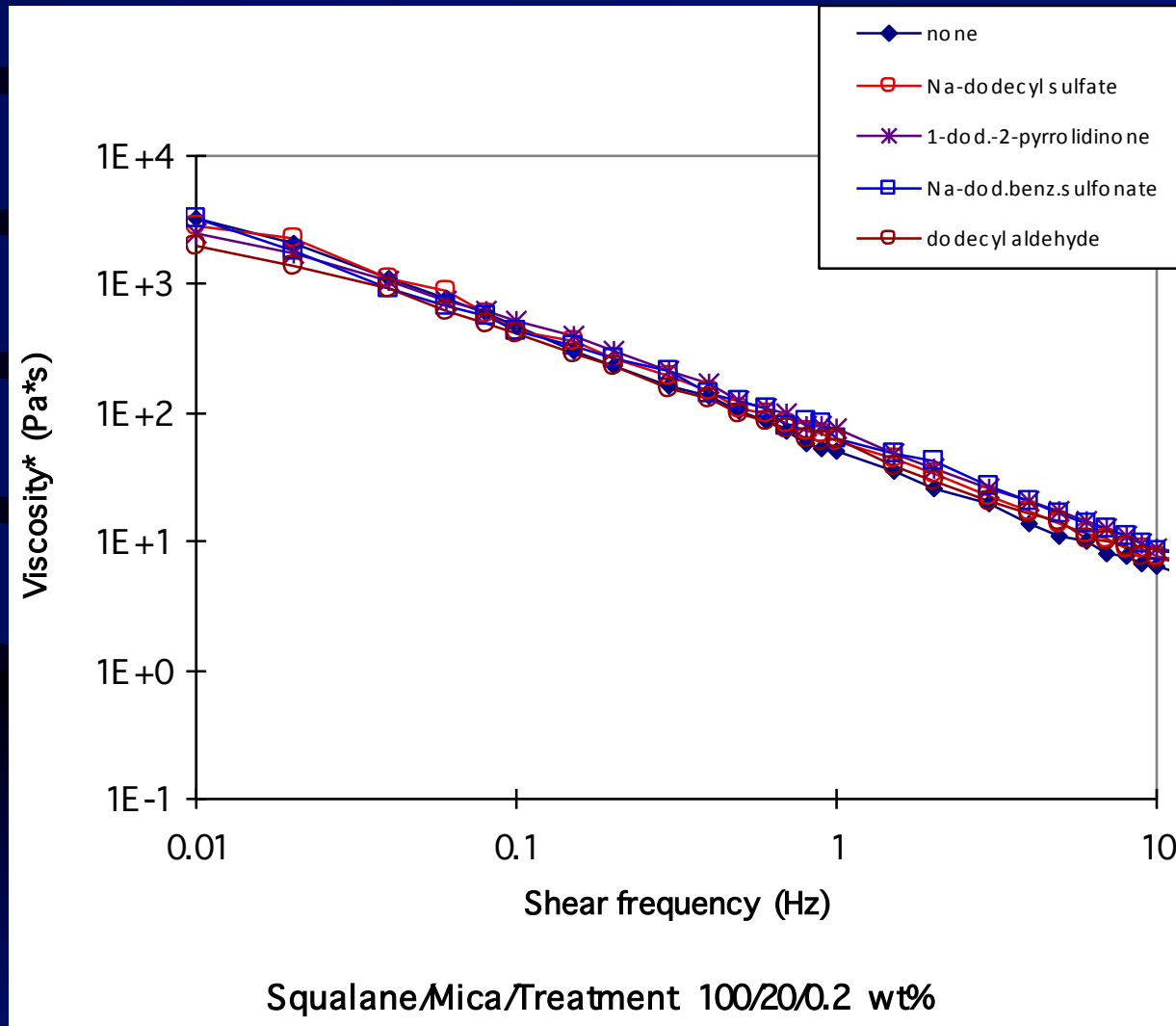
DOLOMITE



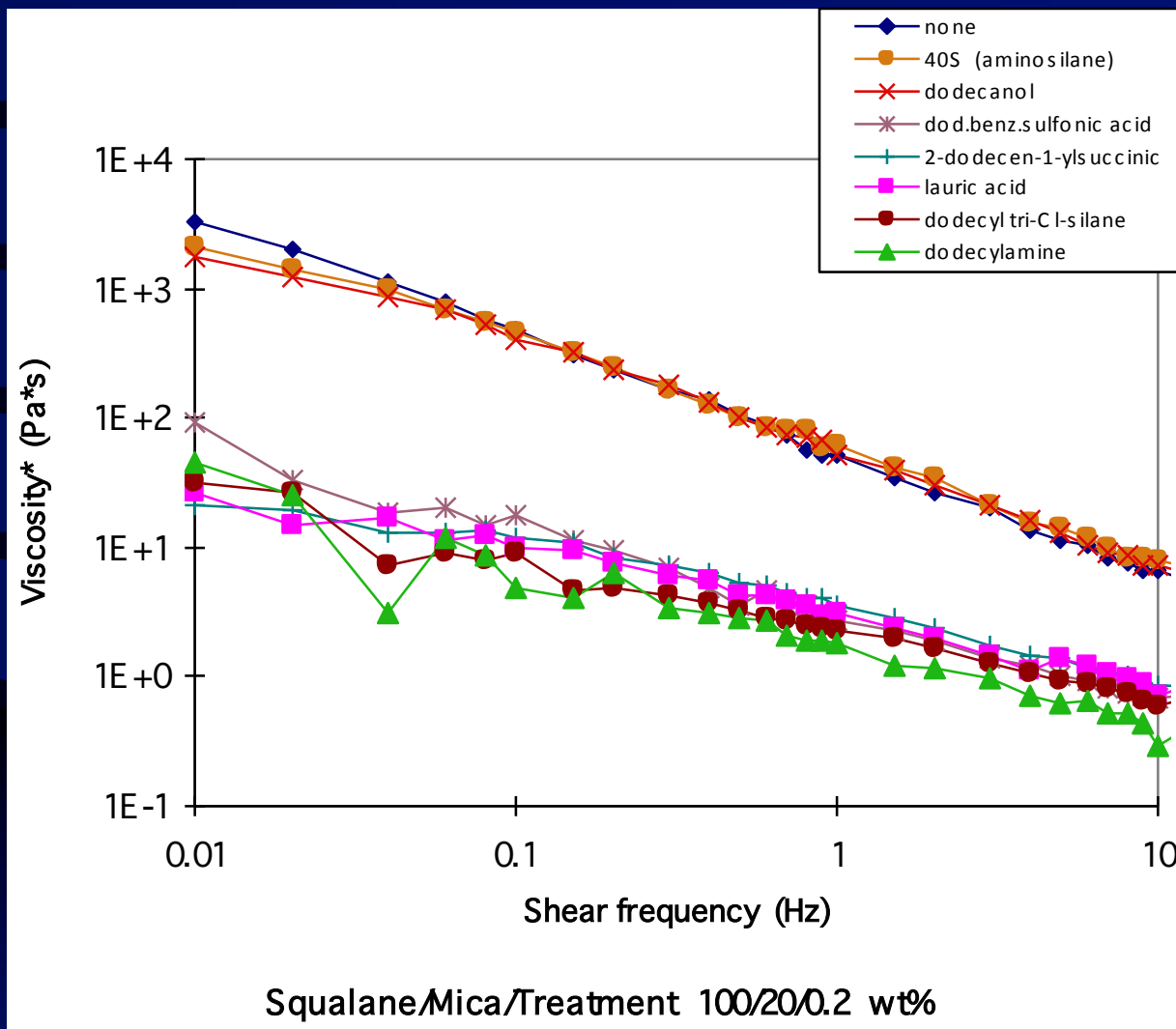
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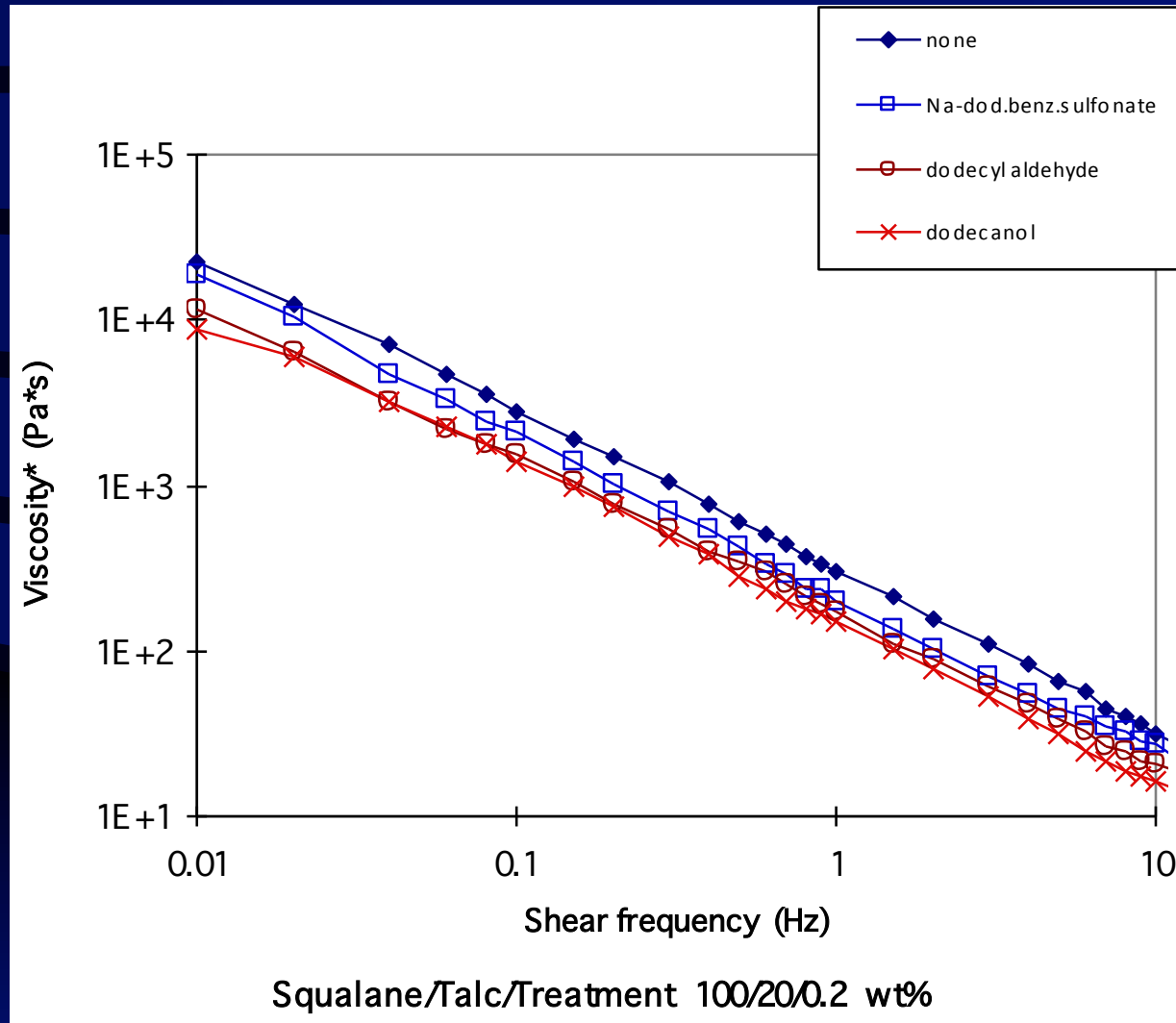
MICA



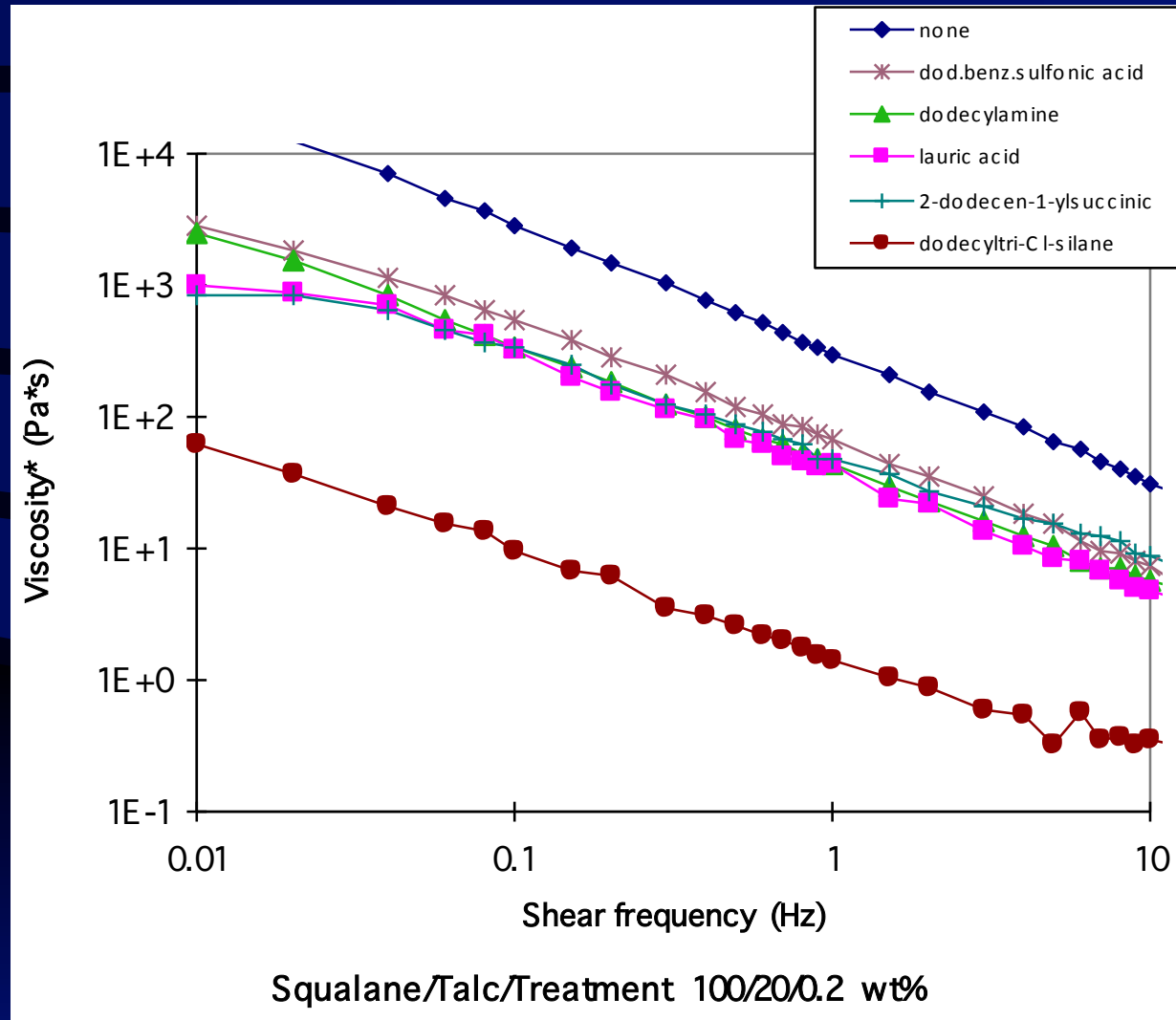
MICA



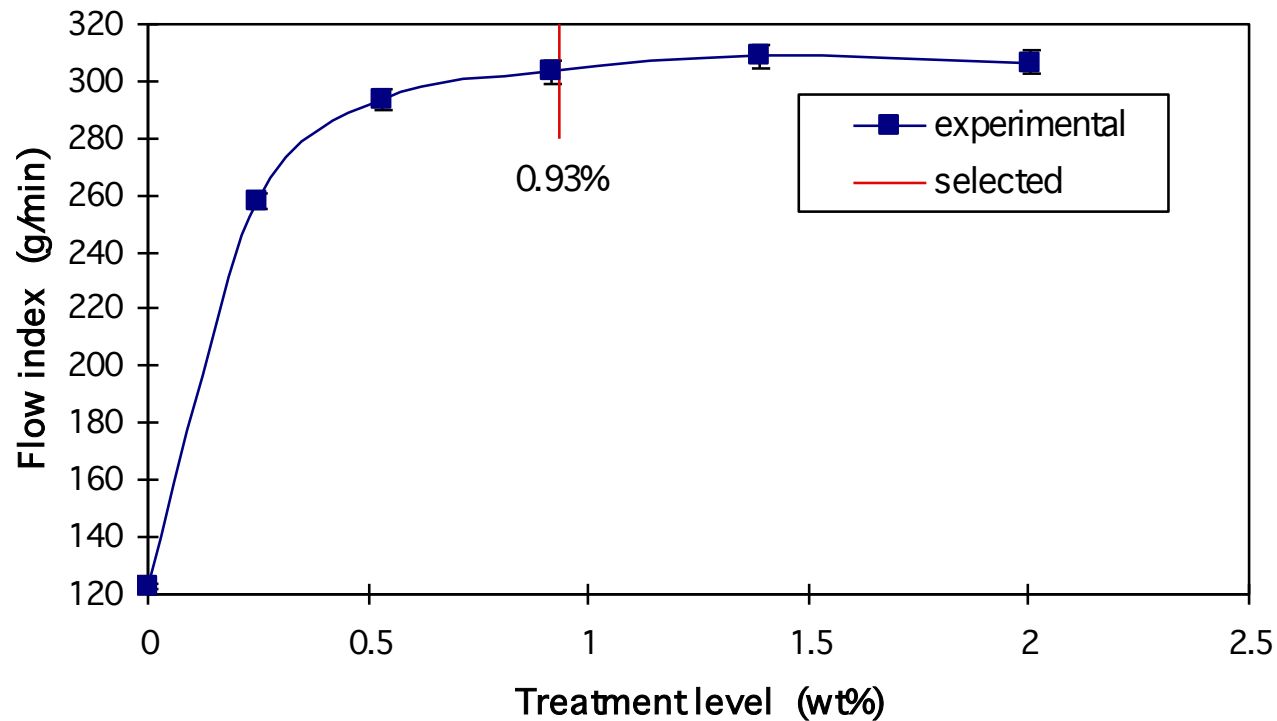
TALC



TALC



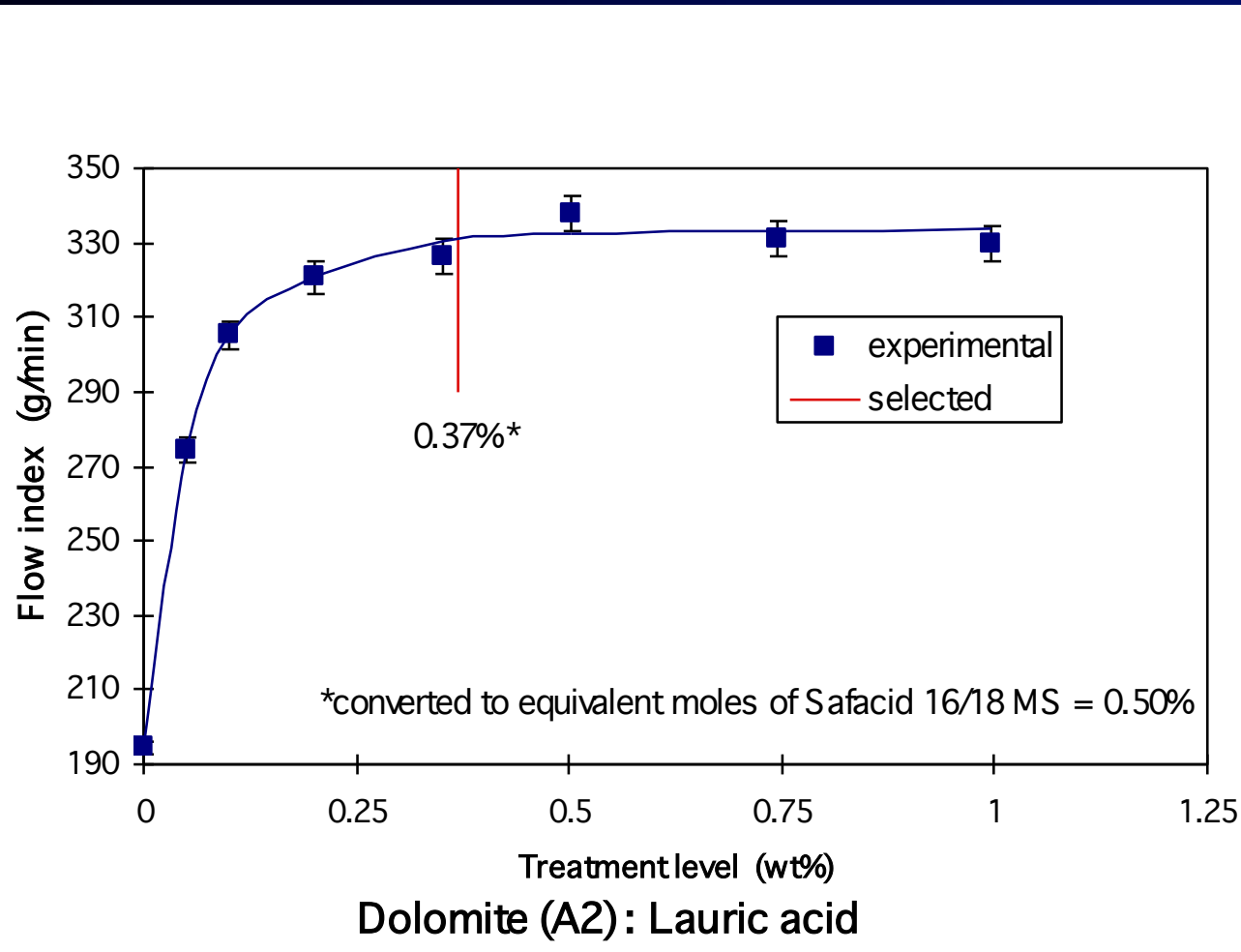
OPTIMUM LEVEL BY FLOW INDEX CaCO_3



$\text{CaCO}_3(\text{MX})$: 2-Dodecen-1-yl succinic anhydride

FLOW INDEX METHOD

DOLOMITE



Conclusions

- Surface treatments for polymers have been hard / expensive to develop
- The rheological method gives a systematic way to develop and optimise treatment
- The chemical type and level can be adjusted quickly without special equipment
- The results have been verified for the fillers in PP homopolymer