

**Glas als Pharmazeutisches
Primärpackmittel
- Probleme und Lösungen -**

Hermann Schirra

**PharmaForum
Congress Park Hanau
7. November**

Company Portrait – Core Competence

- **Focus on “Pharmaceutical Systems”**
- **Chemical and microbiological competence**
- **Surface and volume modification**
- **Development and production**
- **Support by certifications**

Certified according to :

- ➔ **DIN EN ISO 9001 : 2008**
- ➔ **DIN EN ISO 13485 : 2010**
(EU-Medical device directive, MDD)
- ➔ **Annex V 93/42/EWG**

Glass Containers - Problems

Problem:
Tribology
(inside /
outside)

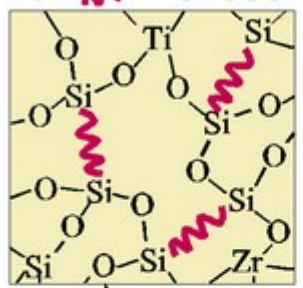
Problem:
Delamination /
Alkaline Extraction
(inside)

Problem:
Protein Adsorption
(inside)

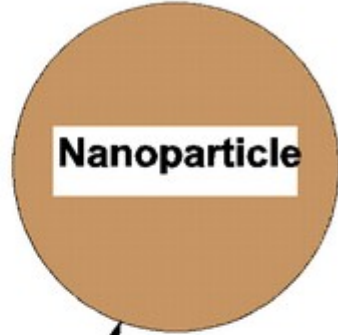
Problem:
Glass Breakage
(inside / outside)

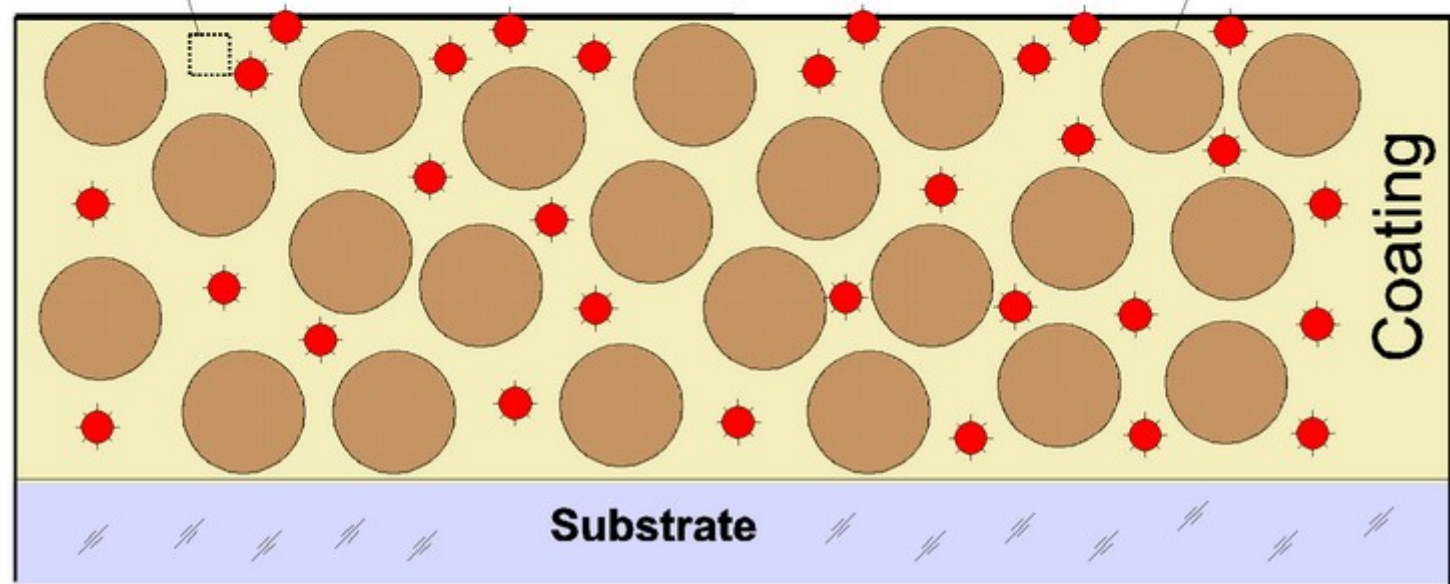


Matrix:
inorganic Network with
organic  Crosslinking

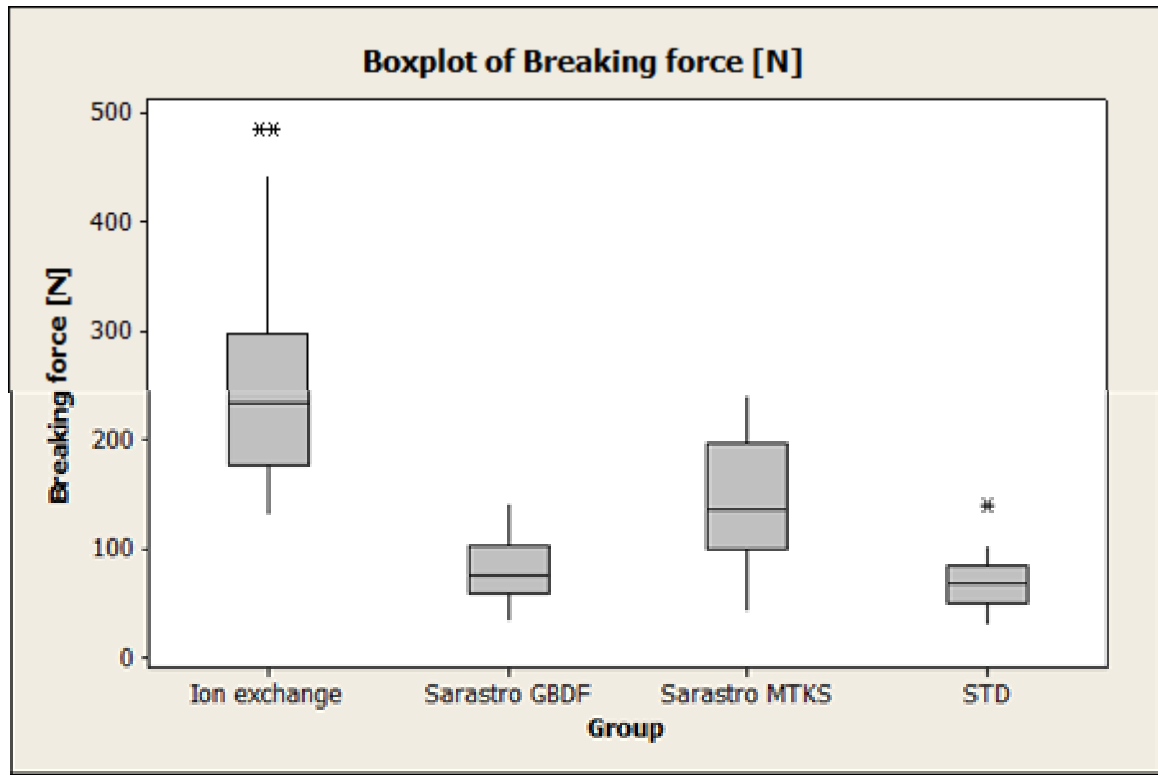


 active
components

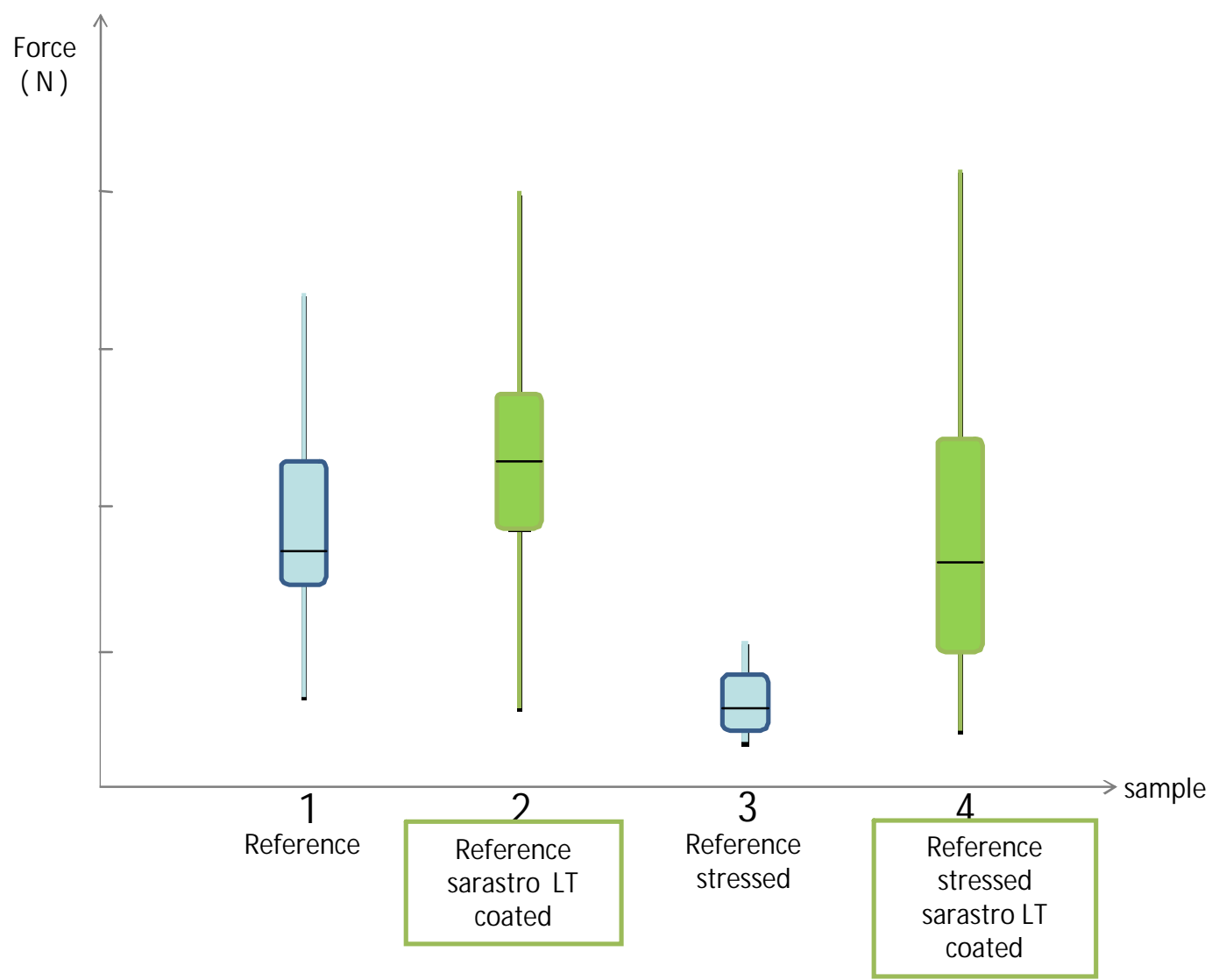
 Nanoparticle



Increase of glass rigidity – Results

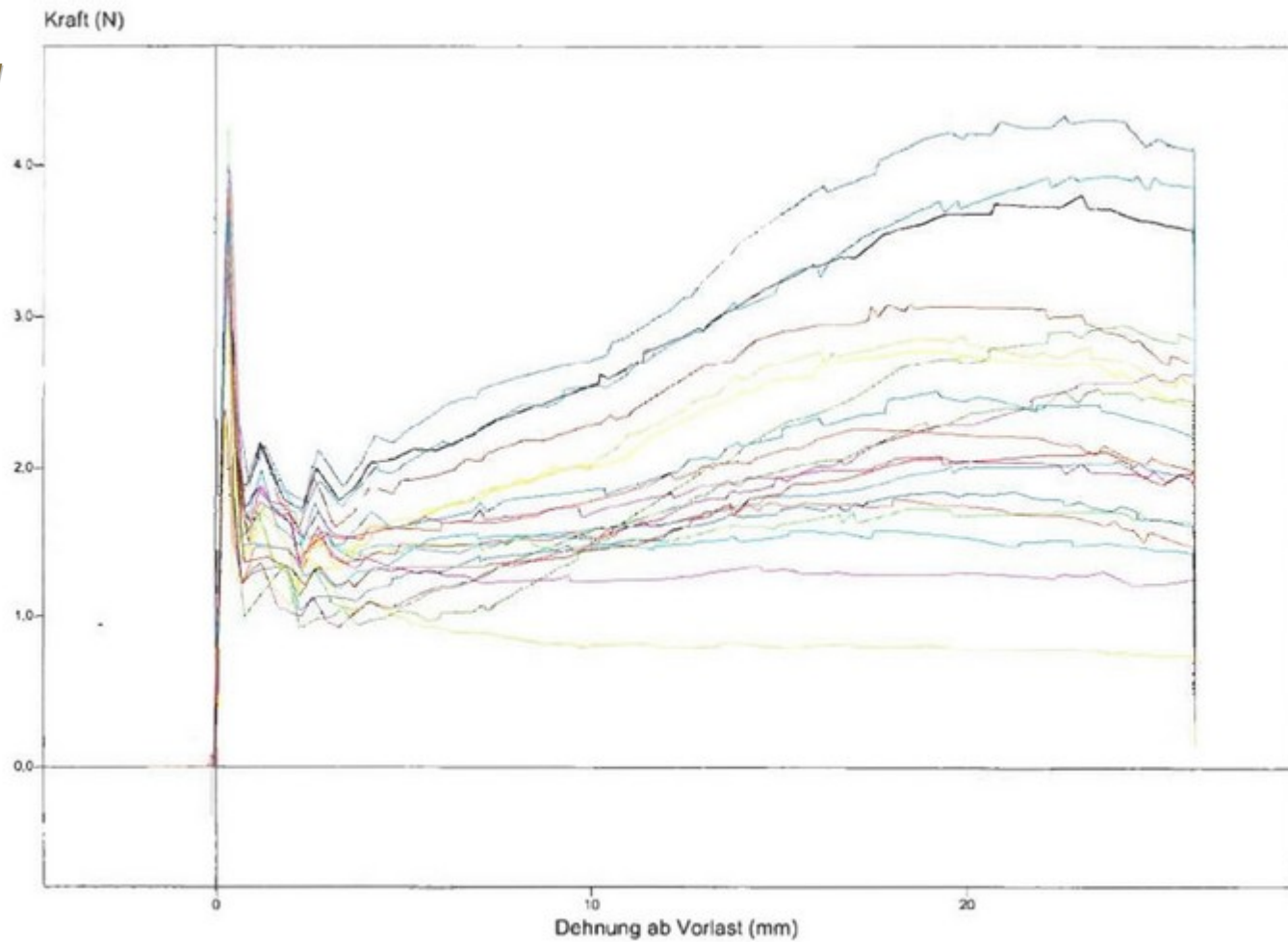


Increase of glass rigidity - Results



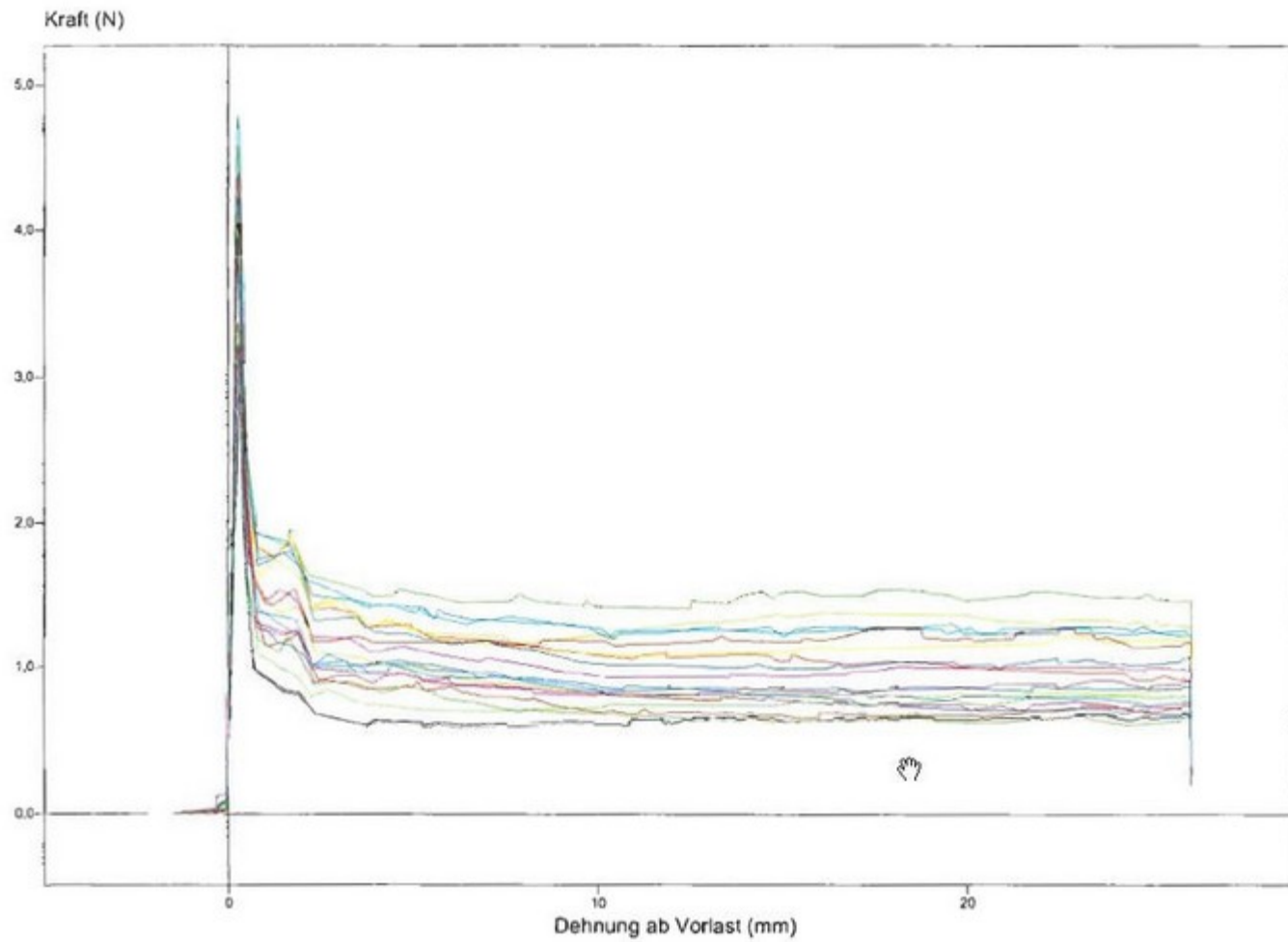
Silicone free Reduced Slip Friction – „Nanotribology“

Silicone coated

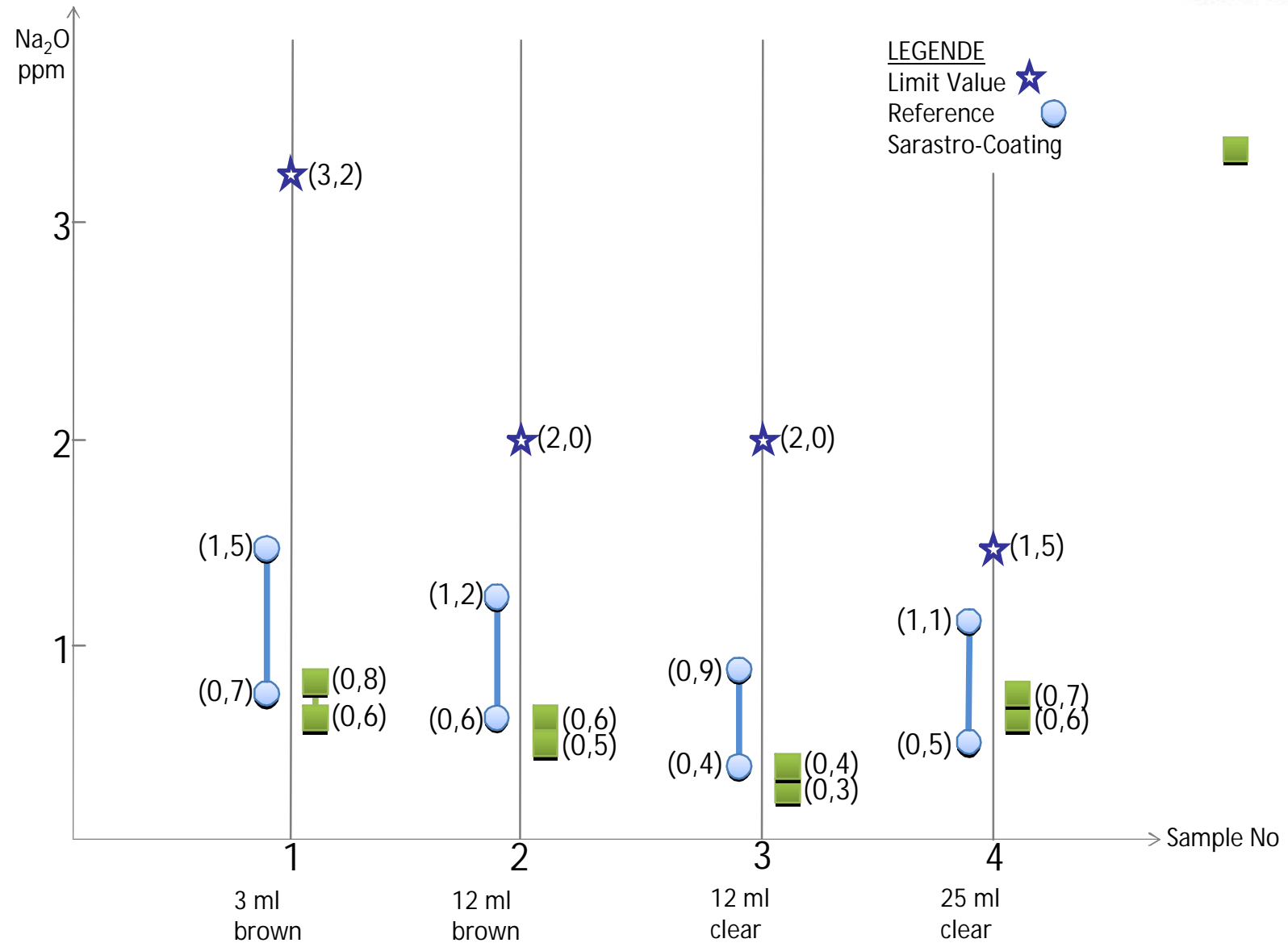


Silicone free: Reduced Slip Friction

Fluorine Coated

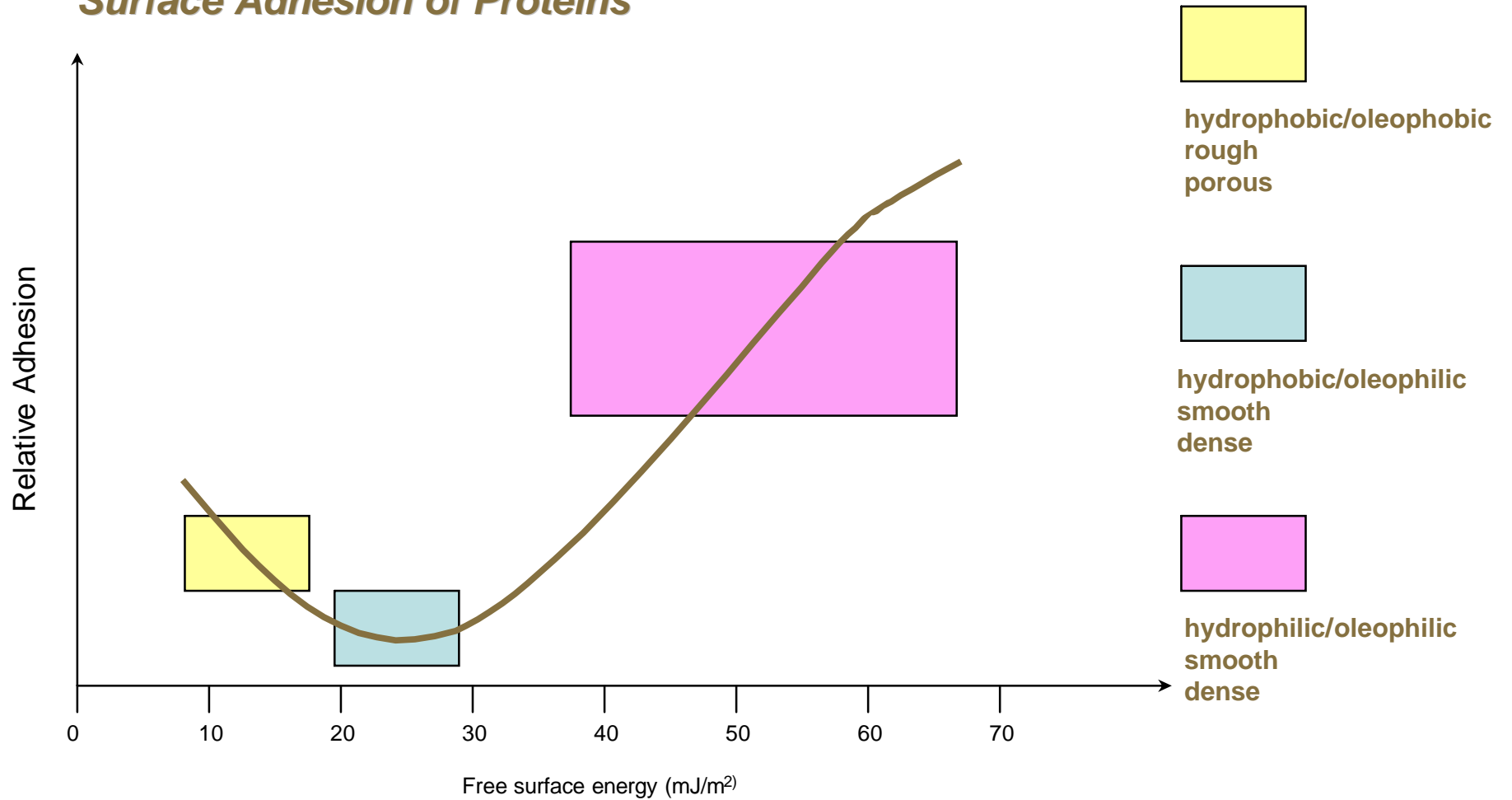


Permeation Barrier Properties e.g. Glass Containers



Reduction of Protein Adhesion

Surface Adhesion of Proteins



Approach: Tribological Improvement by Additives



- *Release, where necessary*
- *Significant Reduction of Silicone Oil Consumption*
- *Significant Reduction of Fine Particle Formation*
- *Significant Reduction of Protein Agglomeration*
- *No Need for „Siliconization“*
- *OEM Process without additional Steps*
- *High Cost Effectiveness*

Summary

“Typical glass container problems can be solved by the use of inorganic-organic chemistry”

Including:

- Reduction of Protein Adsorption**
- Increase of Glass Strength**
- Substitution of Silicone Oils**
- Reduction of Alkaline Extraction**

sarastro GmbH
Zum Schacht 7
D-66287 Quierschied-Göttelborn

Tel +49 (0)6825 800 890
Fax +49 (0)6825 800 891

info@sarastro-nanotec.com
www.sarastro-nanotec.com