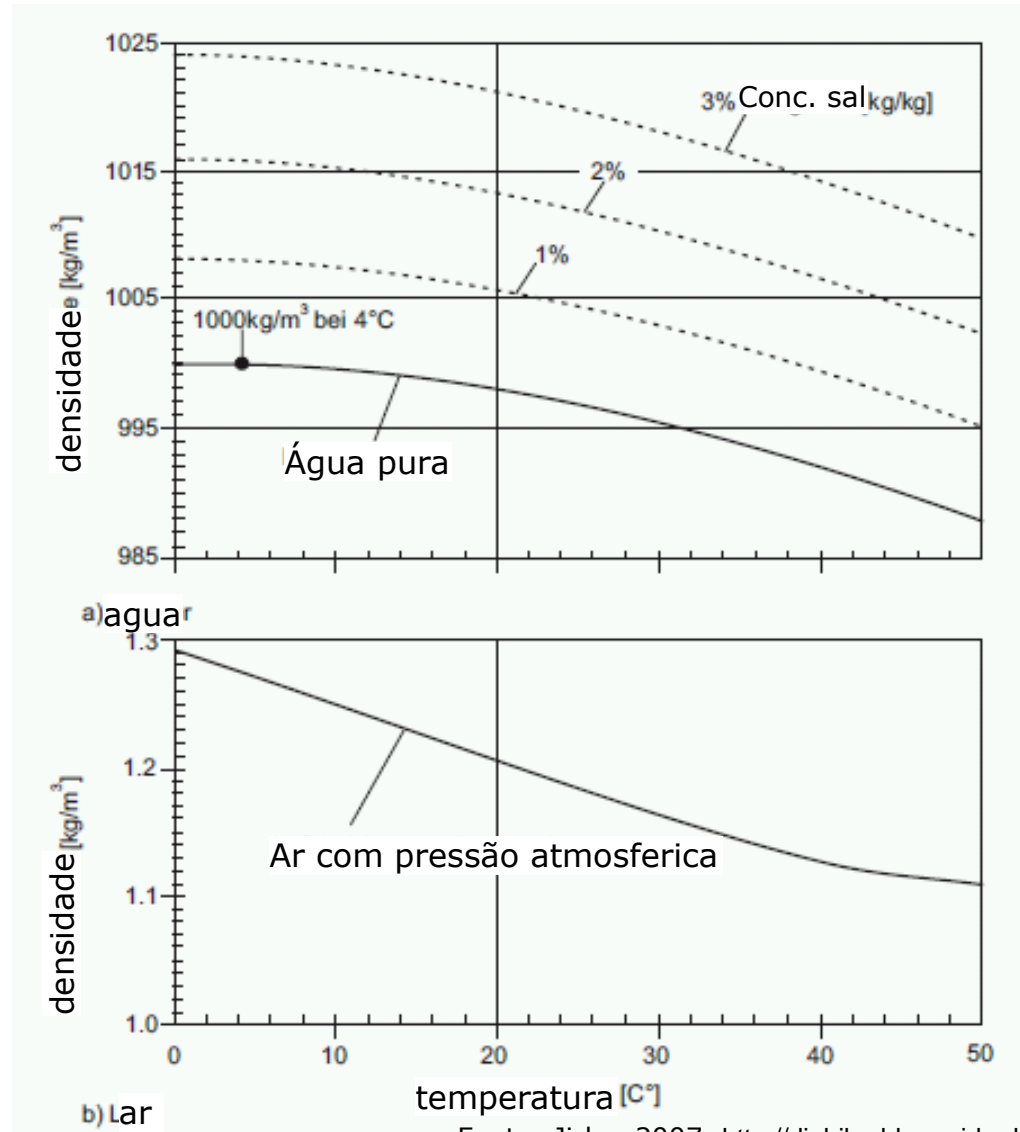


Tobias Bleninger

MECÂNICA DOS FLUIDOS AMBIENTAL I

Propriedades de Fluidos



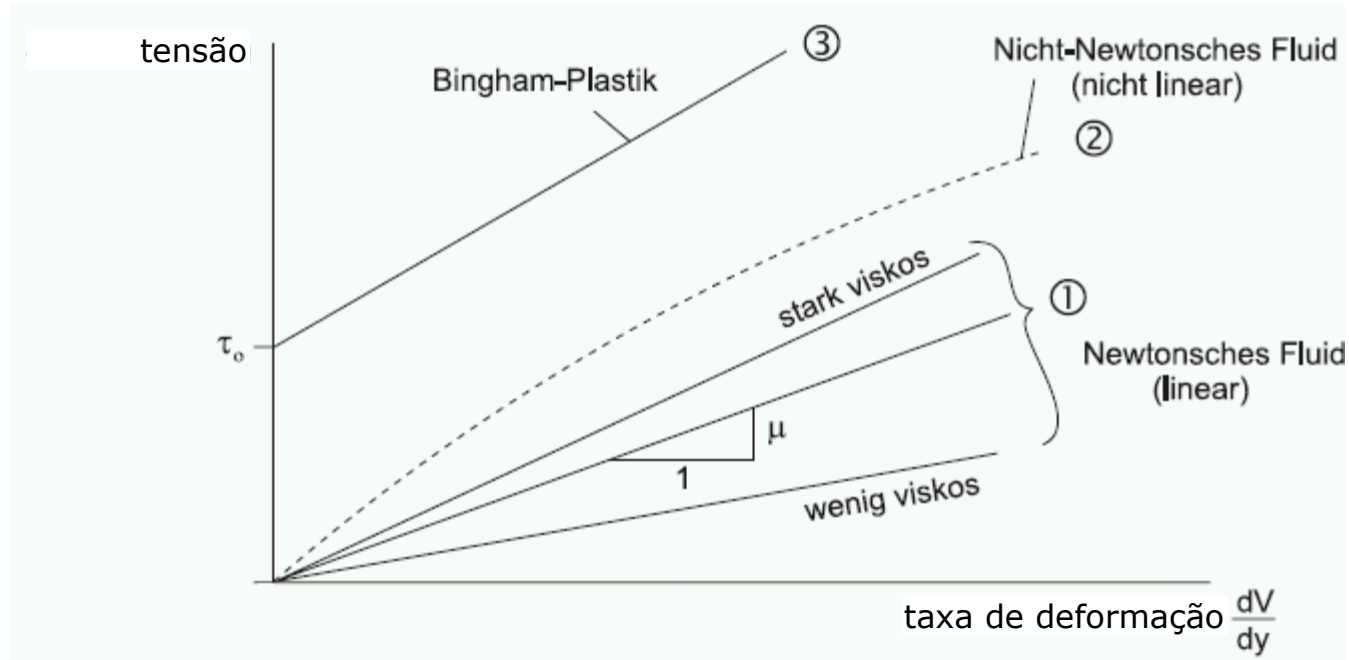
Fonte: Jirka, 2007, <http://digbib.ubka.uni-karlsruhe.de/volltexte/1000007165>

Propriedades de Fluidos

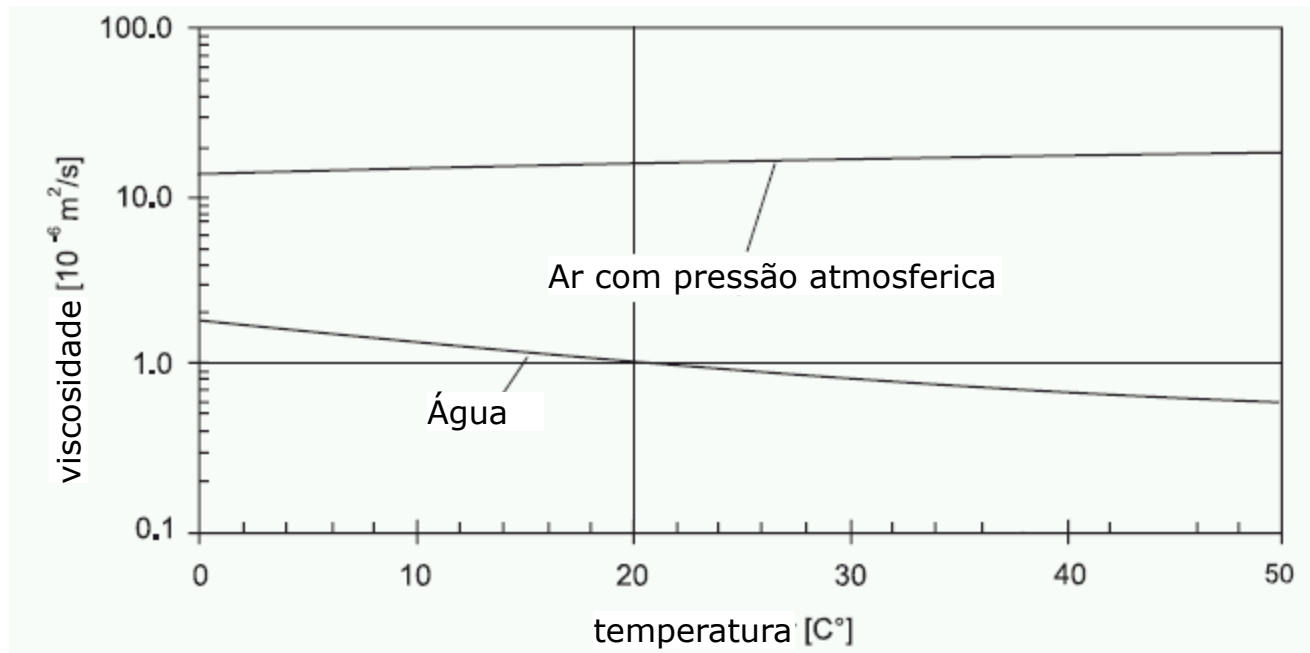
a) Água sem substâncias dissolvidas							
temperatura [°C]	0	4	10	20	30	50	100
Massa específica/densidade	999,8	1000	999,7	998,3	995,7	988	958,1
Viscosidade cinemática ν [$10^{-6} \text{m}^2/\text{s}$]	1,780	1,584	1,300	1,006	0,805	0,556	0,294
Calor específico c_p [J/kgK]	4217	4205	4192	4182	4178	4180	4216
Condutividade de calor α_t [$10^{-6} \text{m}^2/\text{s}$]	0,135	-	-	0,143	-	-	0,168
Modulo de elasticidade E [10^9Pa]	1,964	-	2,092	2,197	2,233	2,264	2,041
Pressão de vapor p_d [hPa]	6,11	8,13	12,27	23,37	42,41	123,35	1013,3
tensão superficial σ [N/m]	0,0756	0,0749	0,0742	0,0728	0,0712	0,0679	0,0589
b) Ar com pressão atmosférica 1013 hPa Elastizitätsmodul $E = 1,42 \cdot 10^9 \text{ Pa}$ bei adiabatischen Verhältnissen							
temperatura [°C]	0	4	10	20	30	50	100
Massa específica [m^3]	1,293	1,274	1,247	1,205	1,165	1,092	0,946
Viscosidade cinemática ν [$10^{-6} \text{m}^2/\text{s}$]	13,28	13,64	14,18	15,10	16,03	17,86	23,15
Calor específico c_p [J/kgK]	1006	-	-	1005	-	-	-
Condutividade de calor α_t [$10^{-6} \text{m}^2/\text{s}$]	18,49	-	-	21,19	-	-	-

Fonte: Jirka, 2007, <http://digbib.ubka.uni-karlsruhe.de/volltexte/1000007165>

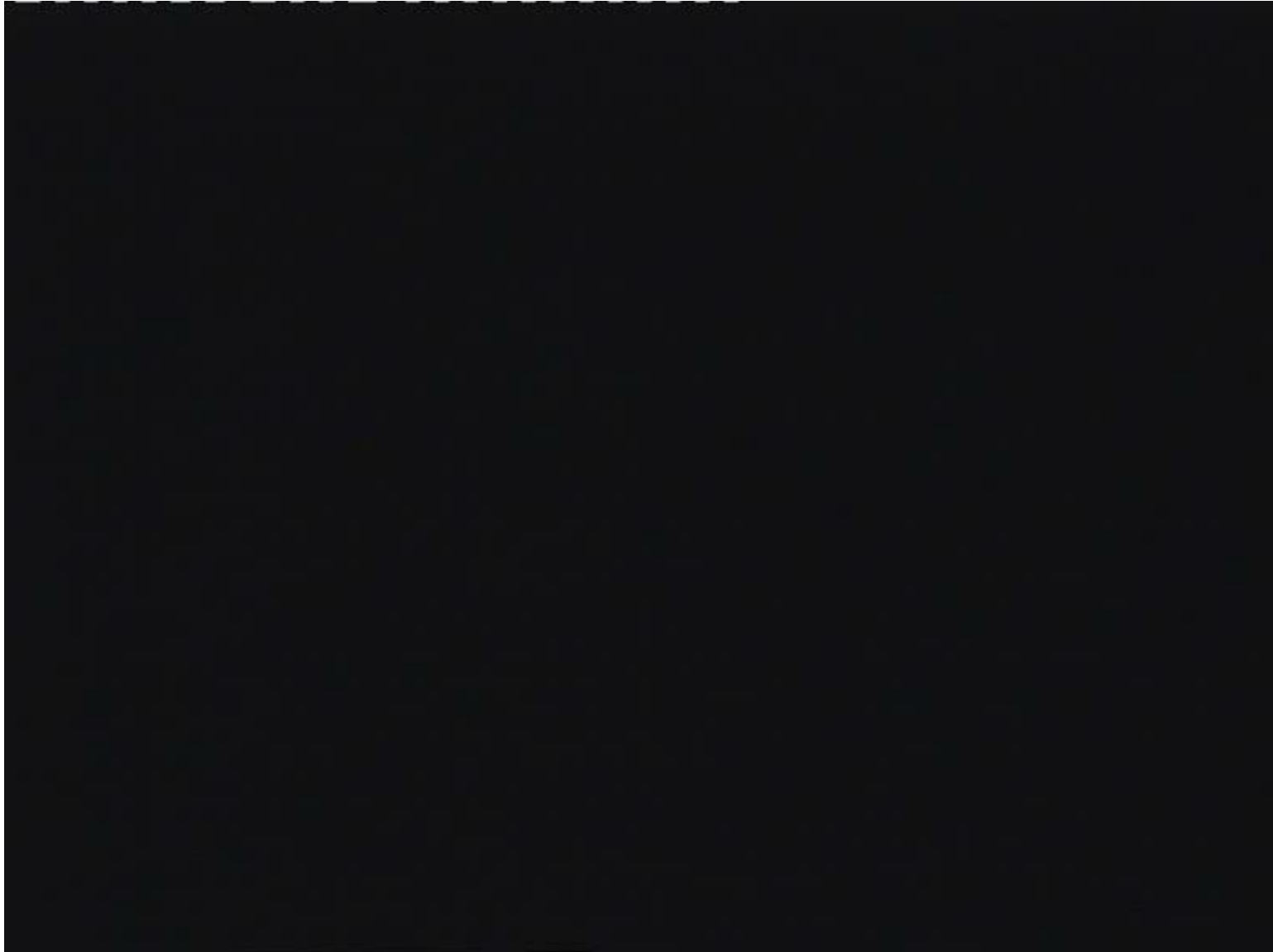
Propriedades de Fluidos



Propriedades de Fluidos



Propriedades de Fluidos



silent film loop FM-3, A.H. Shapiro, NCFMF

http://hydro.ifh.uni-karlsruhe.de/Videos/1_4_viskositaet.html

Propriedades de Fluidos

1,5 Fluideigenschaften an Phasengrenzen; Dampfdruck

silent film loop FM-125 "Cavitation", P. Eisenberg, NCFMF
http://hydro.ifh.uni-karlsruhe.de/Videos/1_5_Dampfdruck.html

Propriedades de Fluidos

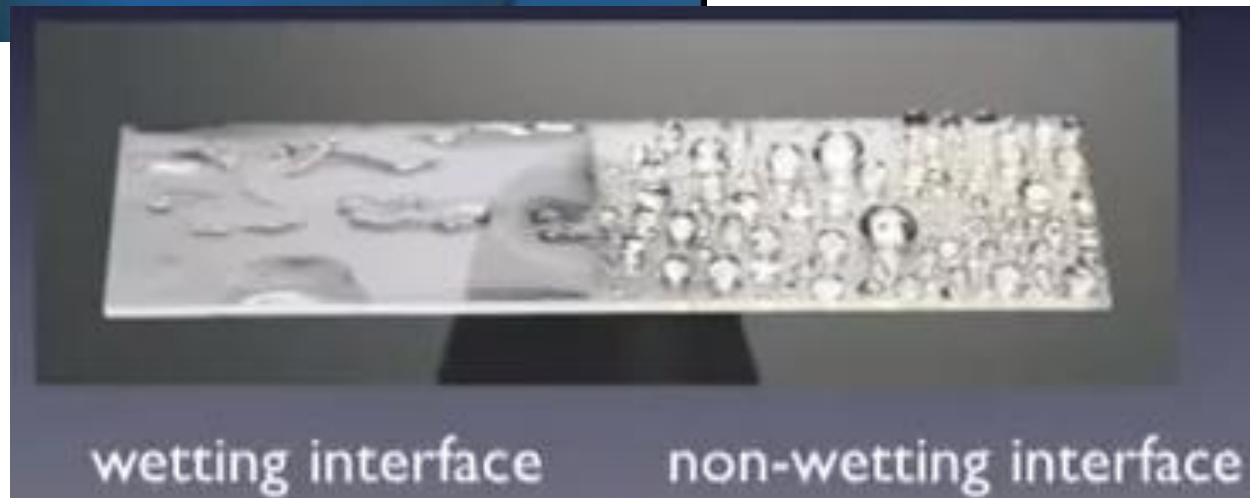
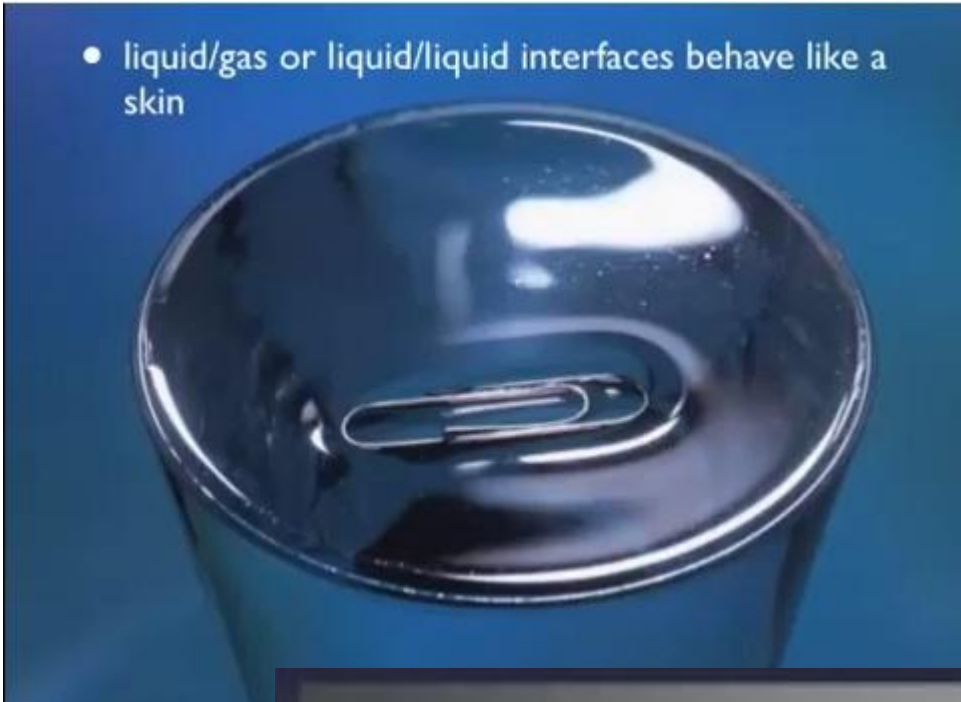
1,5 Fluideigenschaften an Phasengrenzen; Oberflächenspannung

silent film loop FM-72 "Surface Tension in Fluid Mechanics", Lloyd Trefethen, NCFMF

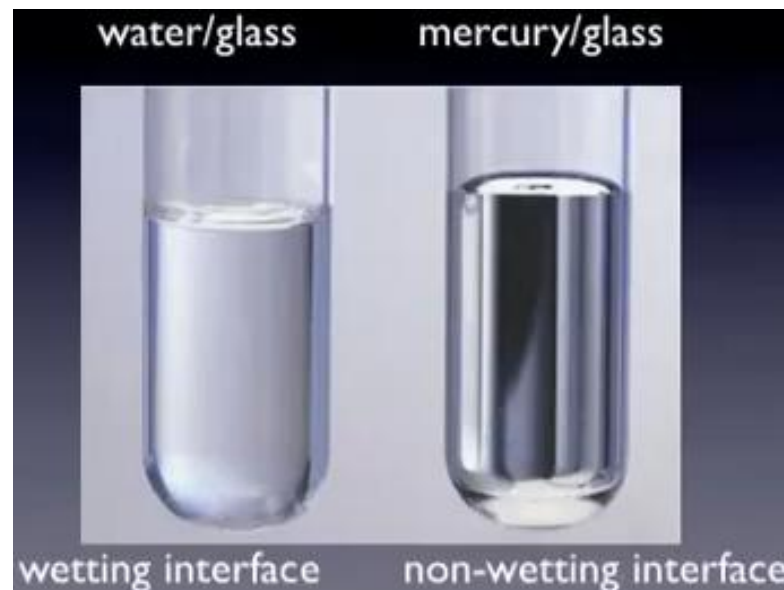
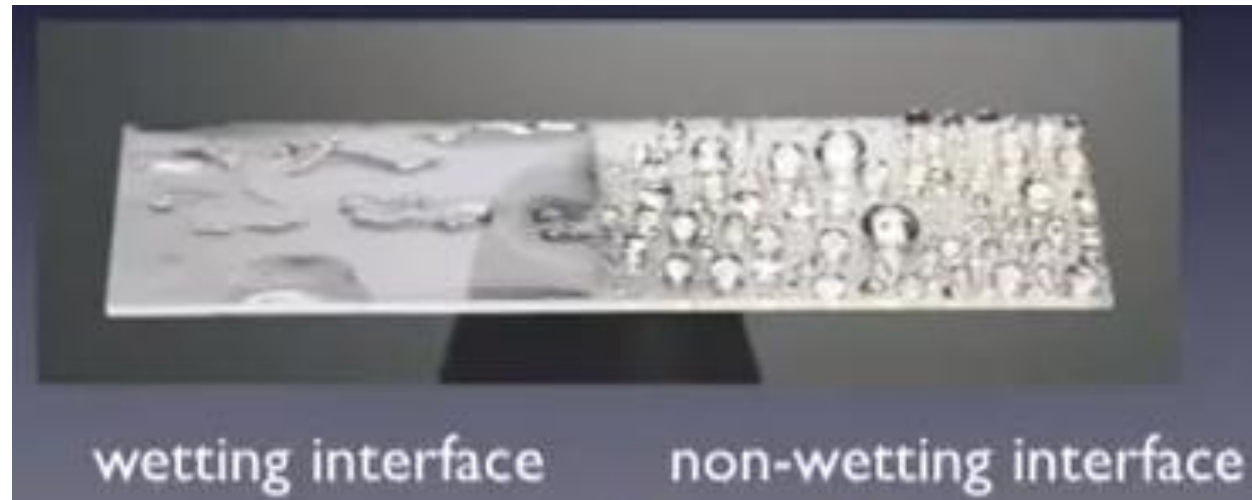
http://hydro.ifh.uni-karlsruhe.de/Videos/1_5_Oberflspannung.html

Propriedades de Fluidos

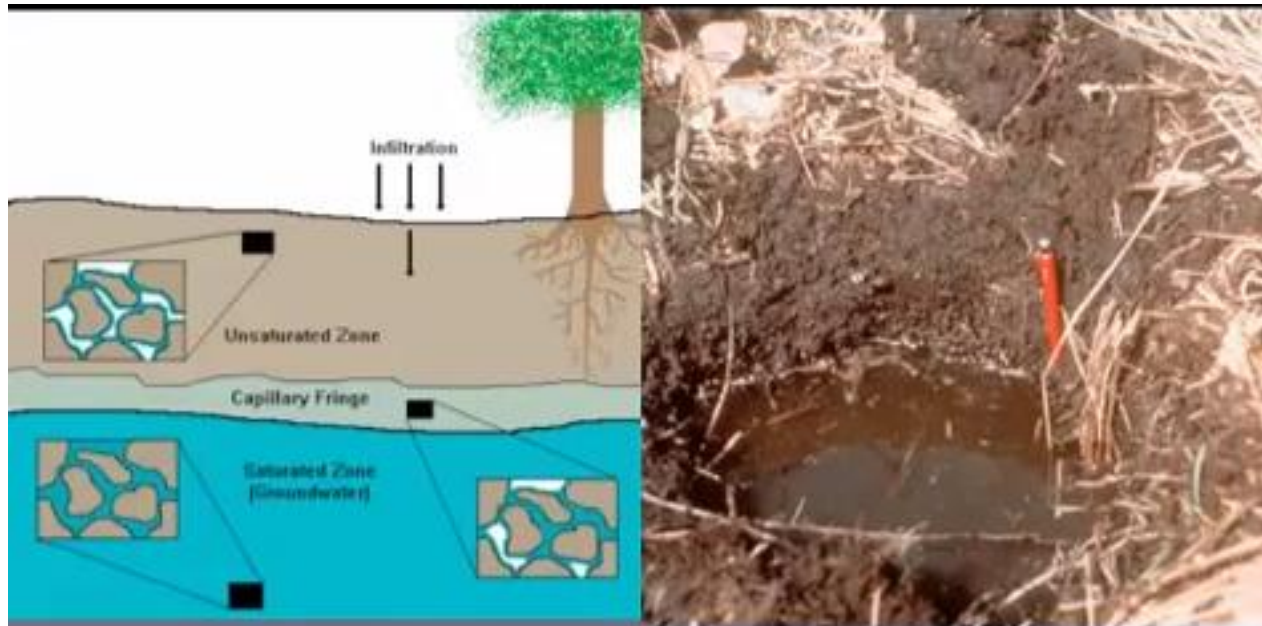
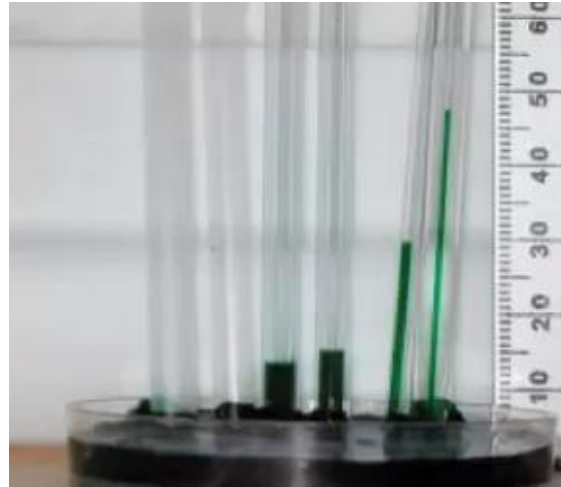
- liquid/gas or liquid/liquid interfaces behave like a skin



Propriedades de Fluidos



Propriedades de Fluidos



Propriedades de Fluidos



<http://news.sciencemag.org/sciencenow/2010/11/cats-tongues-employ-tricky-physi.html>