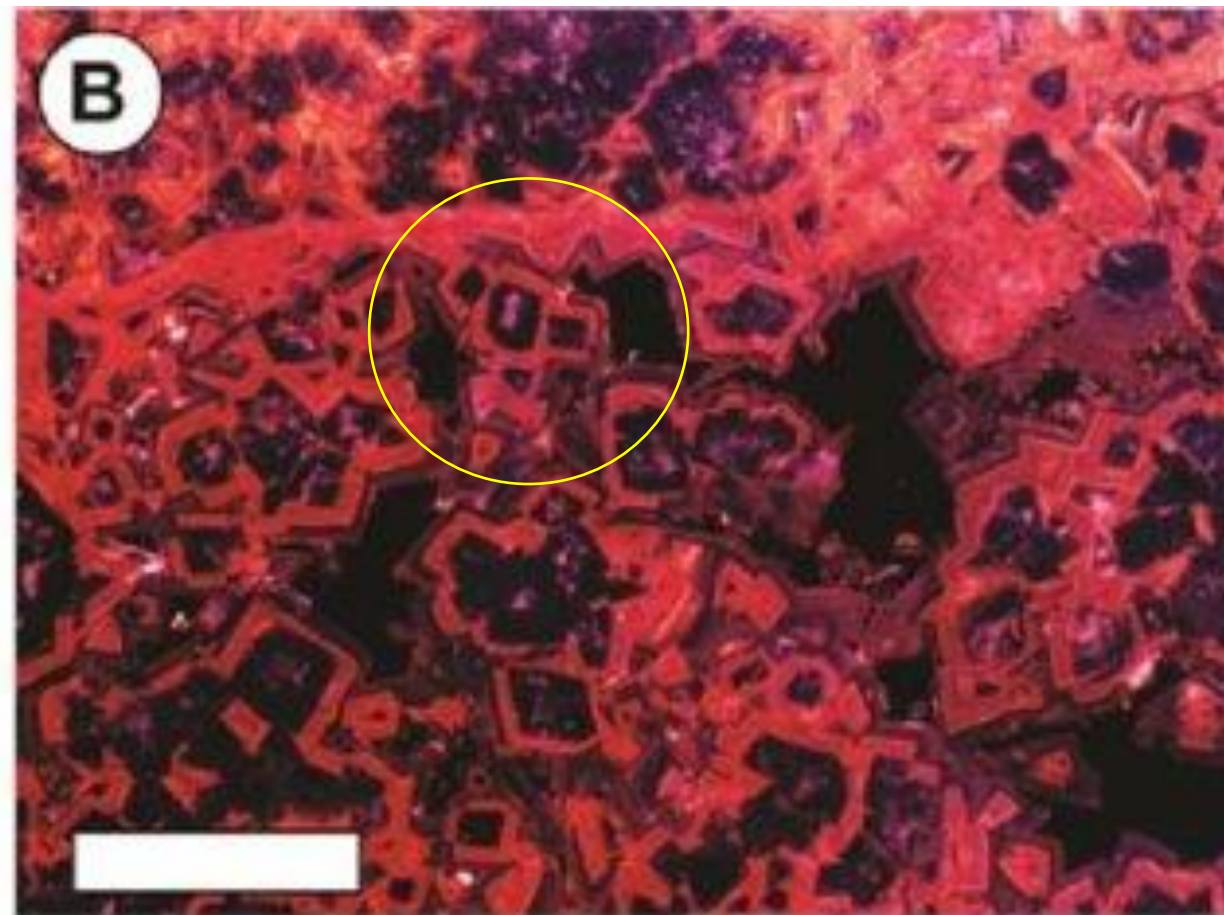
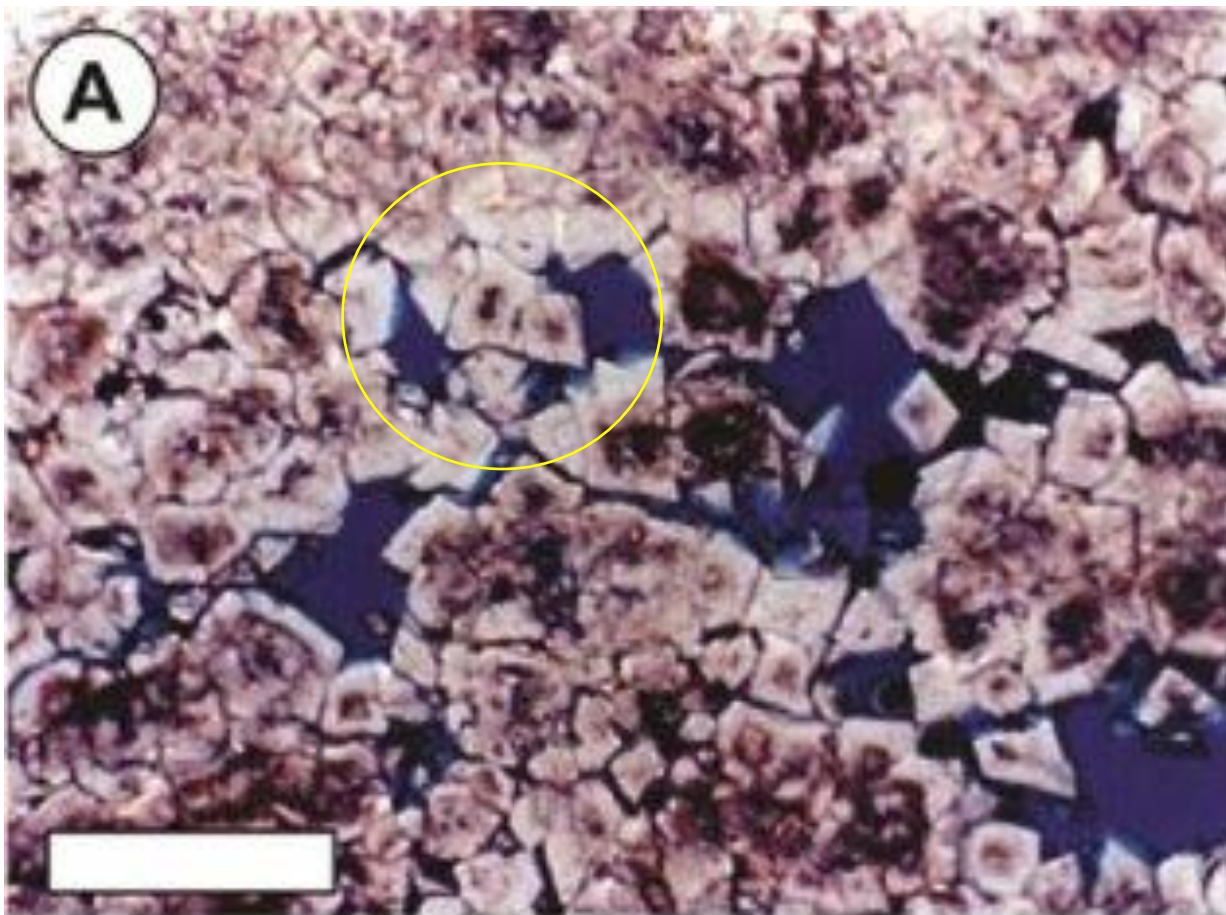
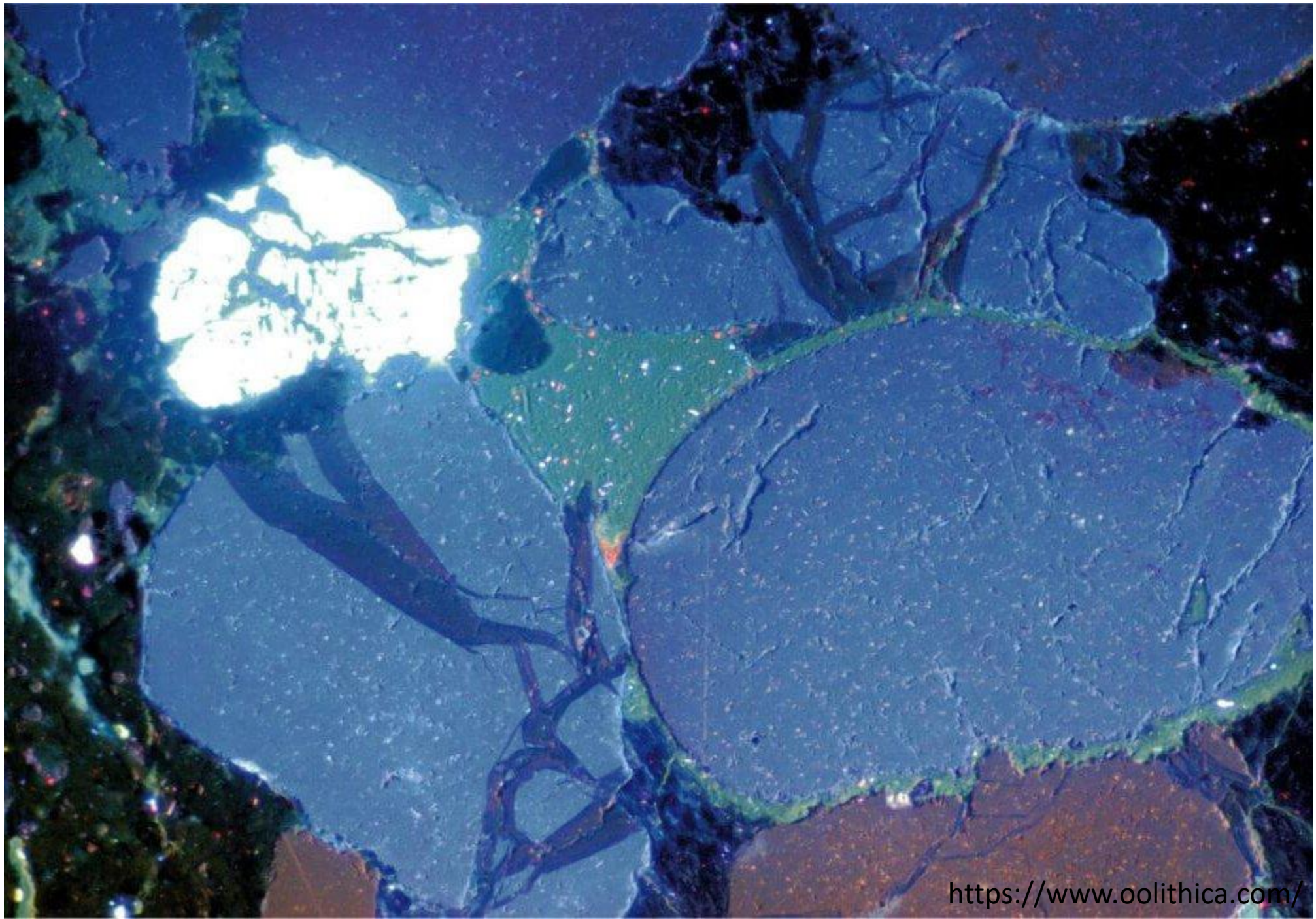


Diagênese

“Porosidade”

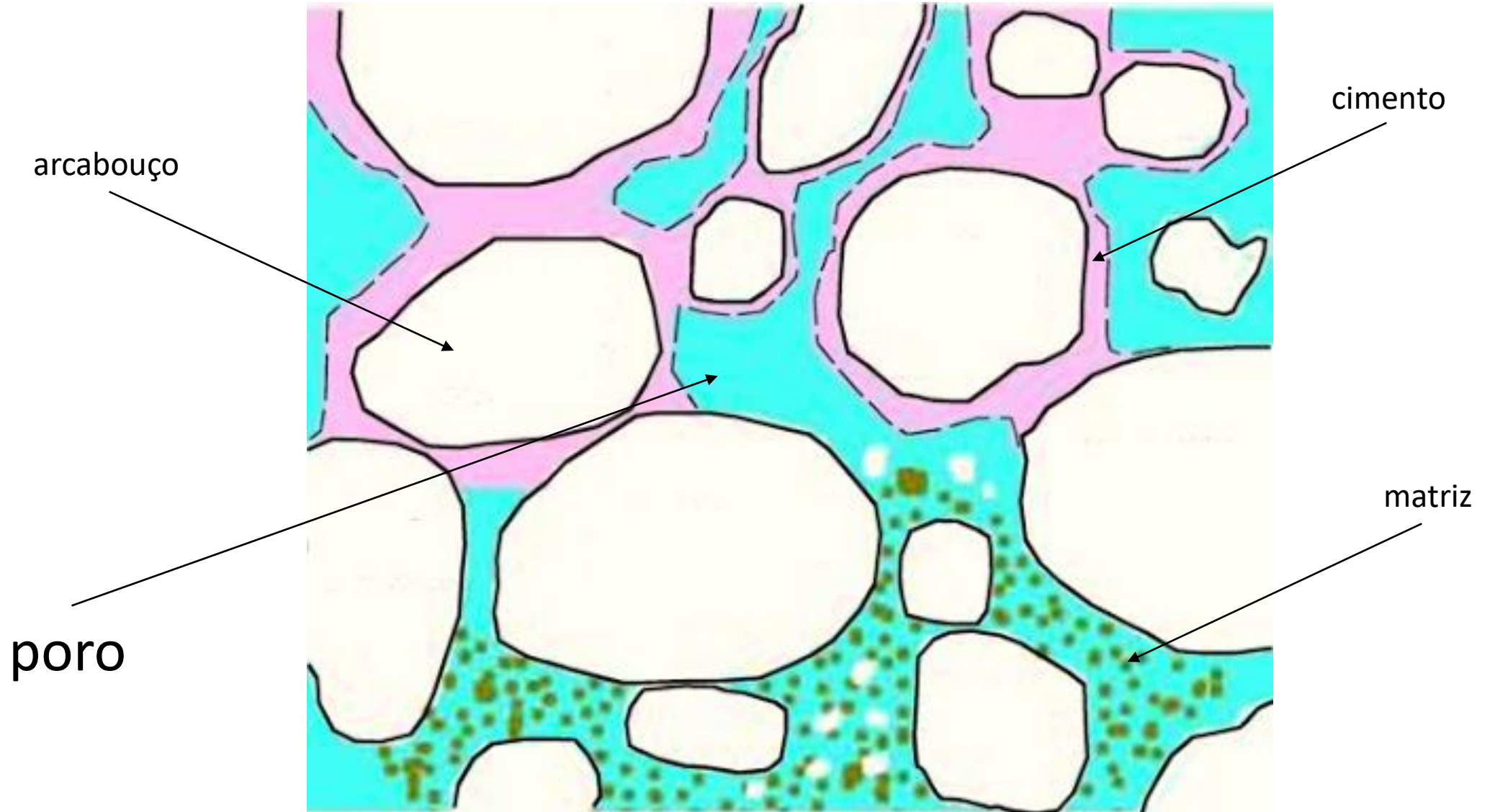
Catodoluminescência

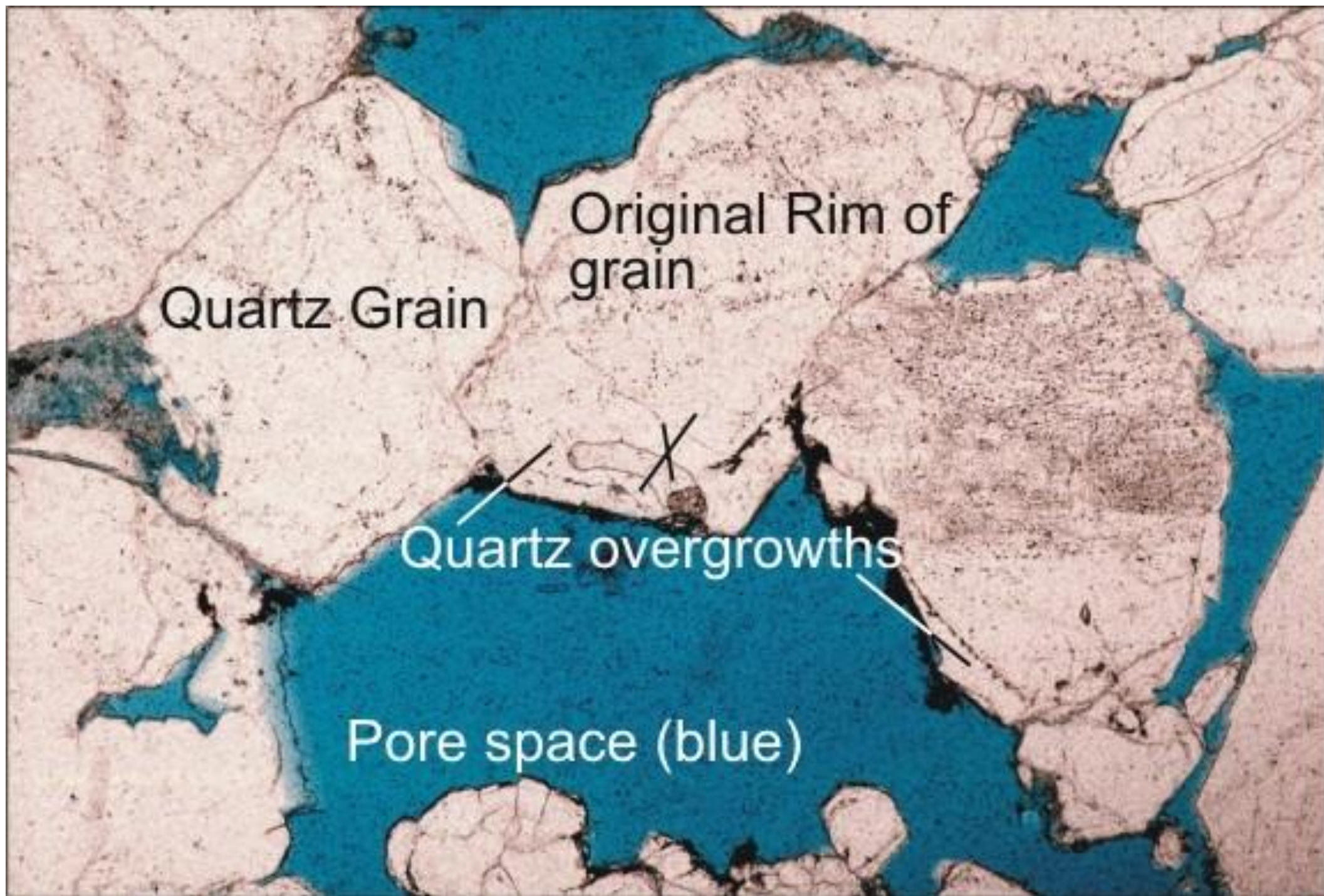




Arcabouço, matriz, cimento e poro

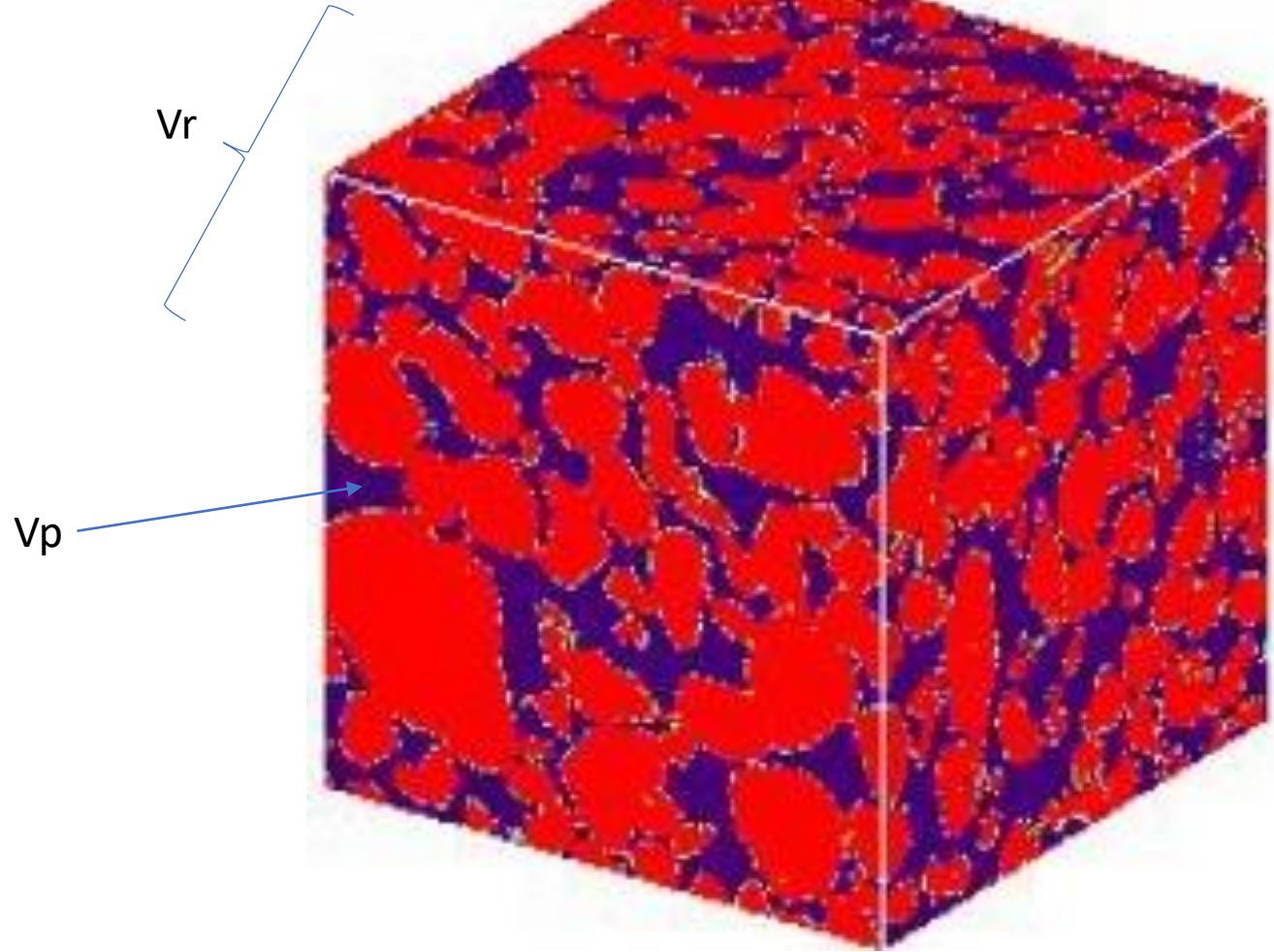
Arenito Berea



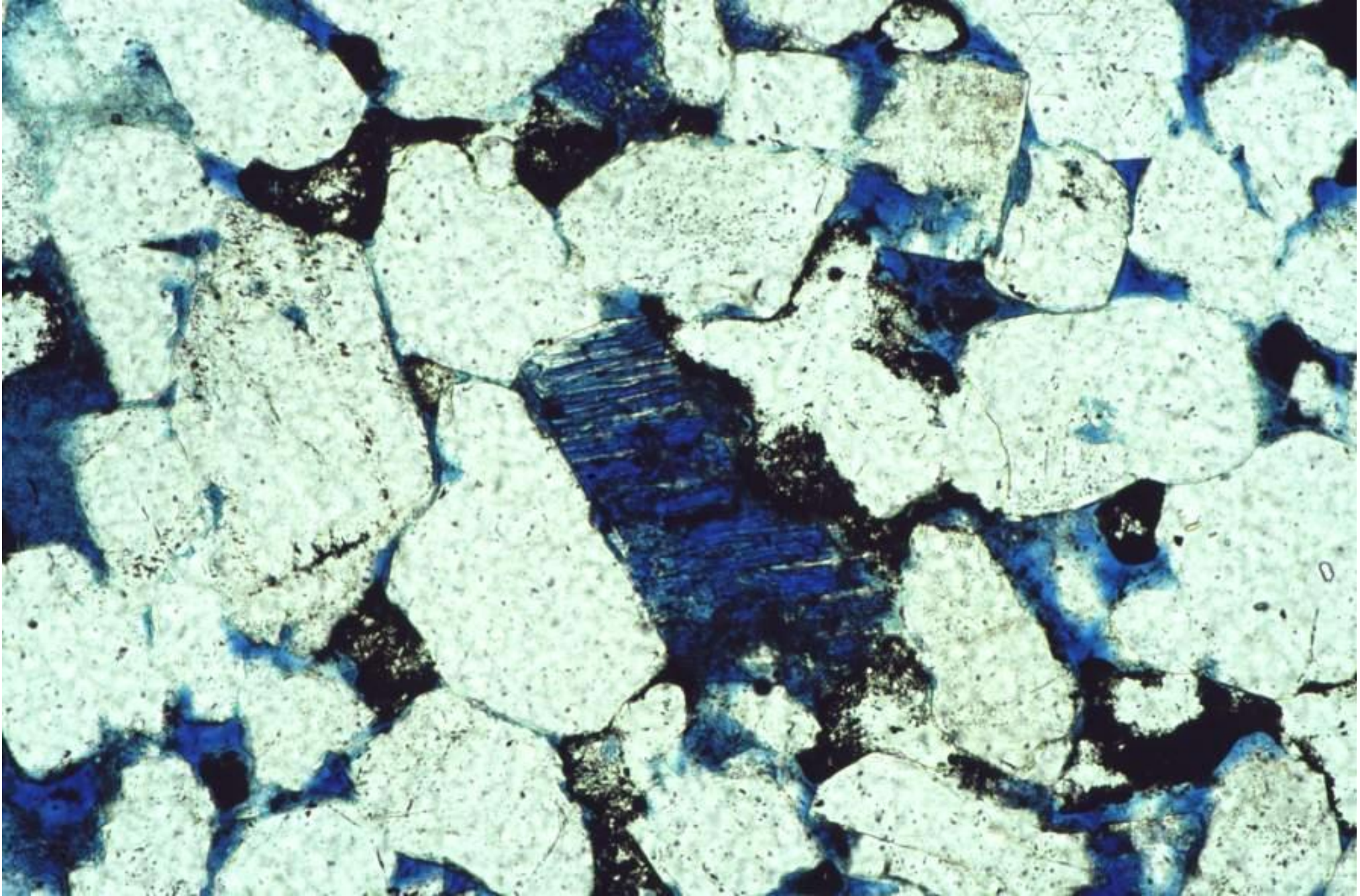


Definição e unidade de medida

- Porosidade ($\emptyset$)
- Unidade: %
- $\emptyset = (V_p/V_r) \times 100$

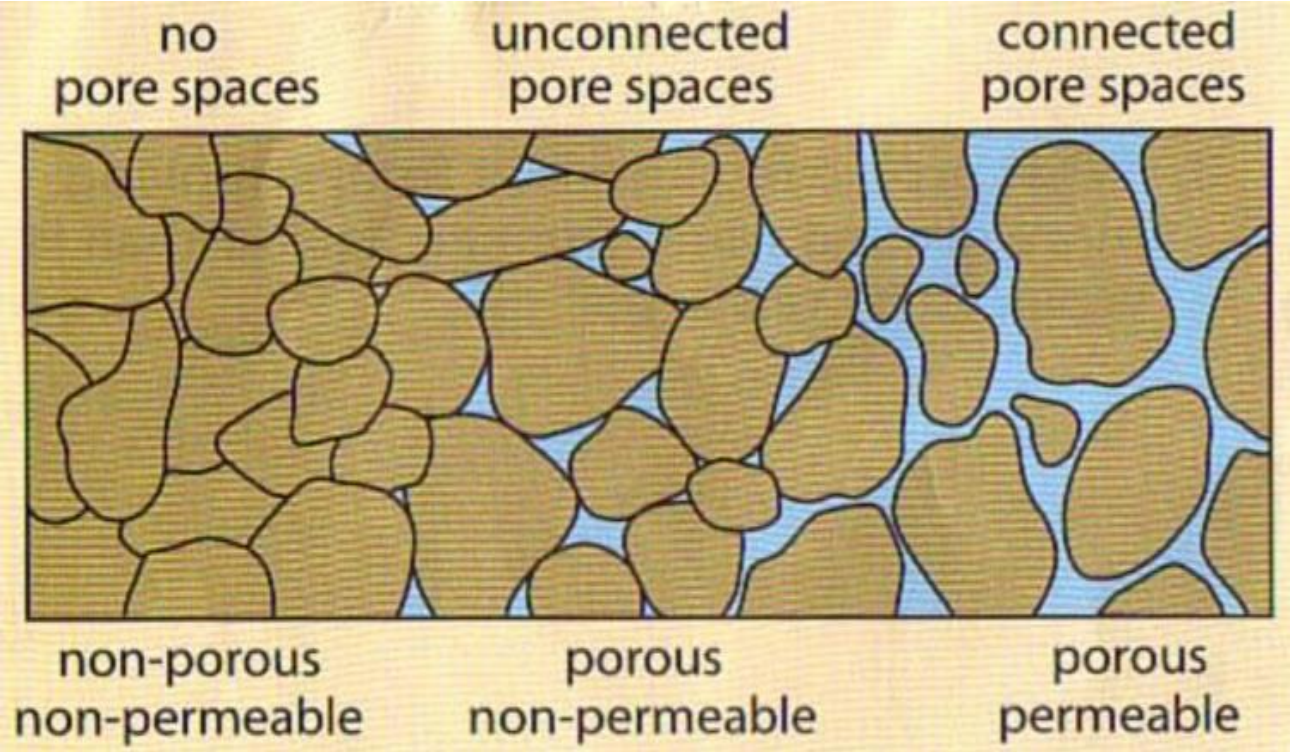


Porosidade primária e secundária



Permeabilidade (K): capacidade em transmitir um determinado fluido

Unidade: Md (mildarcy)



Porosidade (Ø) e permeabilidade (K) de reservatórios de petróleo

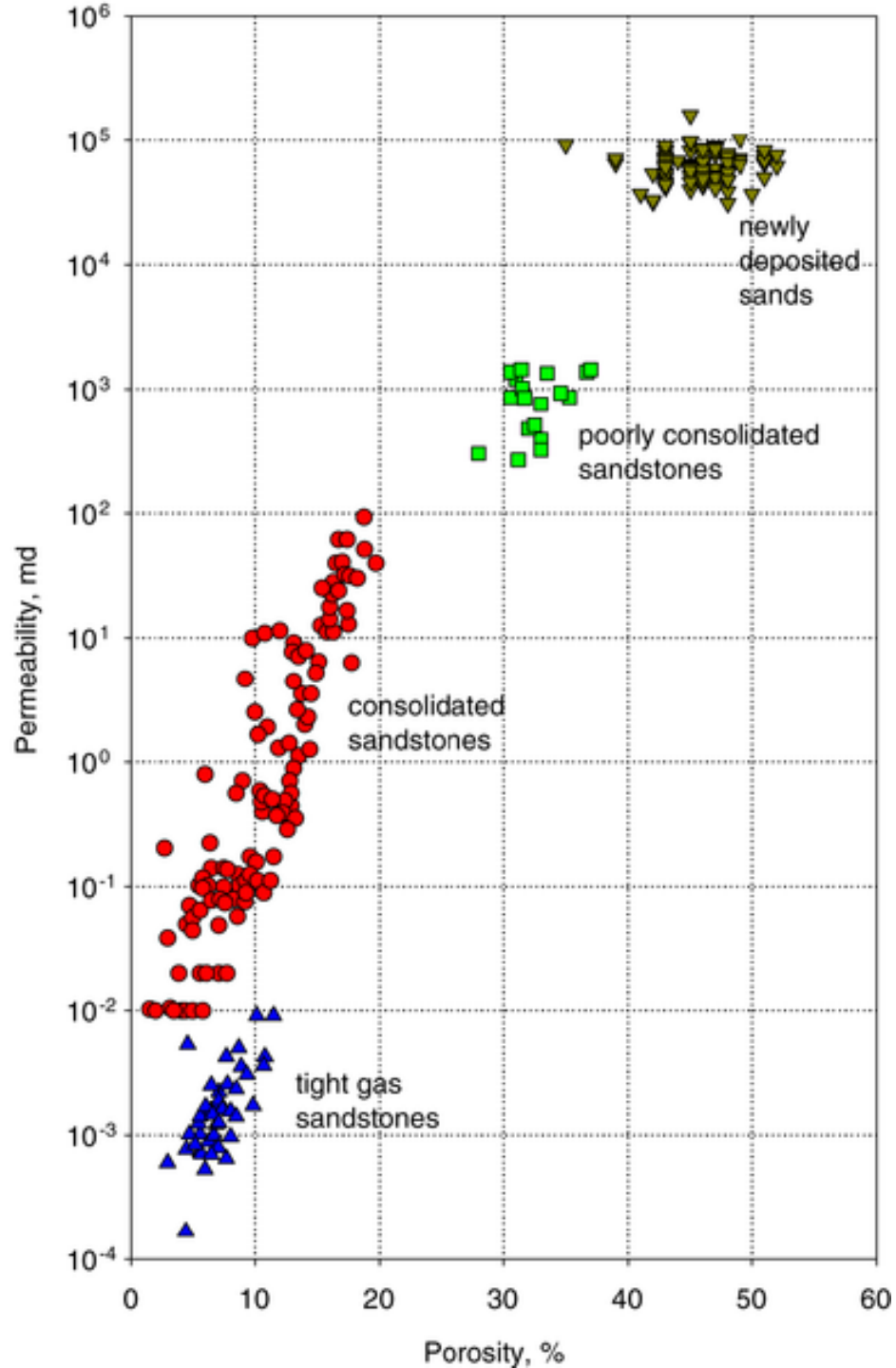
UC Denver

Ø	
0-5%	Insignificante
5-10%	Ruim
10-15%	Razoável
15-20%	Bom
>20%	Excelente

K	
1.0 to 15 mD	Baixa
15 to 50 mD	Moderada
50 to 250 mD	Boa
250 to 1000 mD	Muito boa
> 1000 mD	Excelente

Permeabilidade e porosidade

Areias e arenitos

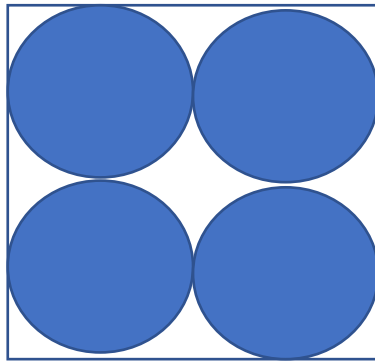


Fatores que controlam ϕ e K
(escala centimétrica a micrométrica)

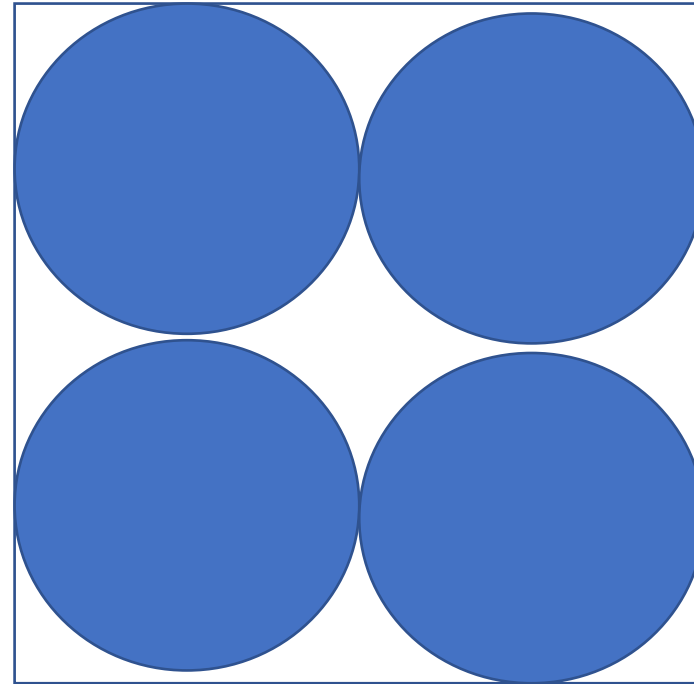
Granulação do arcabouço



ϕ e K



0,1 mm

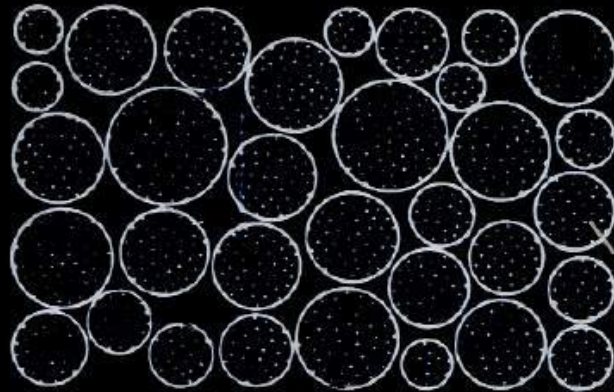


0,1 mm

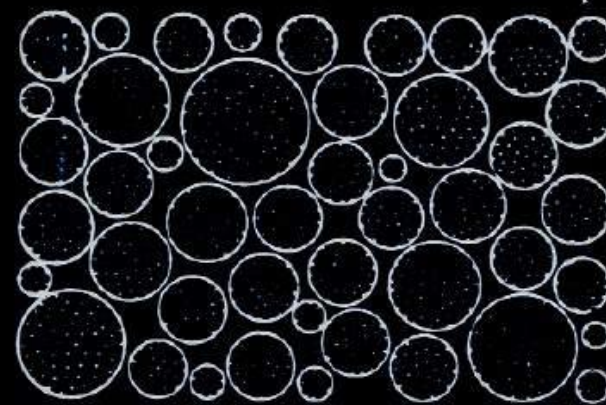
Seleção granulométrica

Comparison chart for sorting and sorting classes.
(from: Pettijohn, Potter, and Siever, 1972)

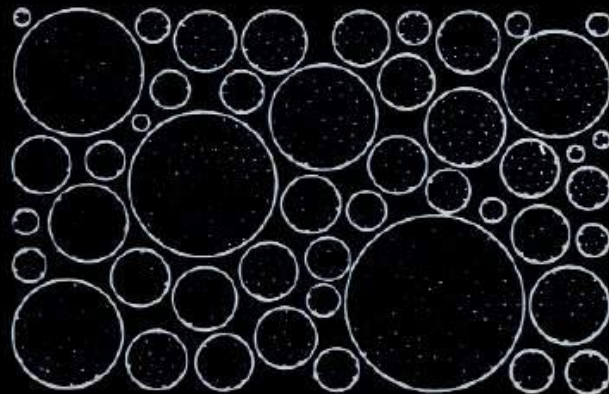
SORTING IMAGES



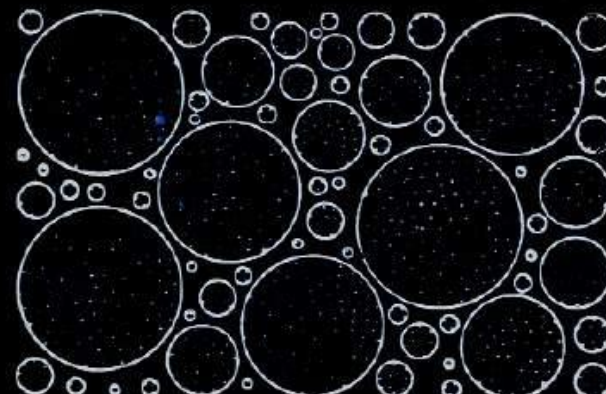
0.35



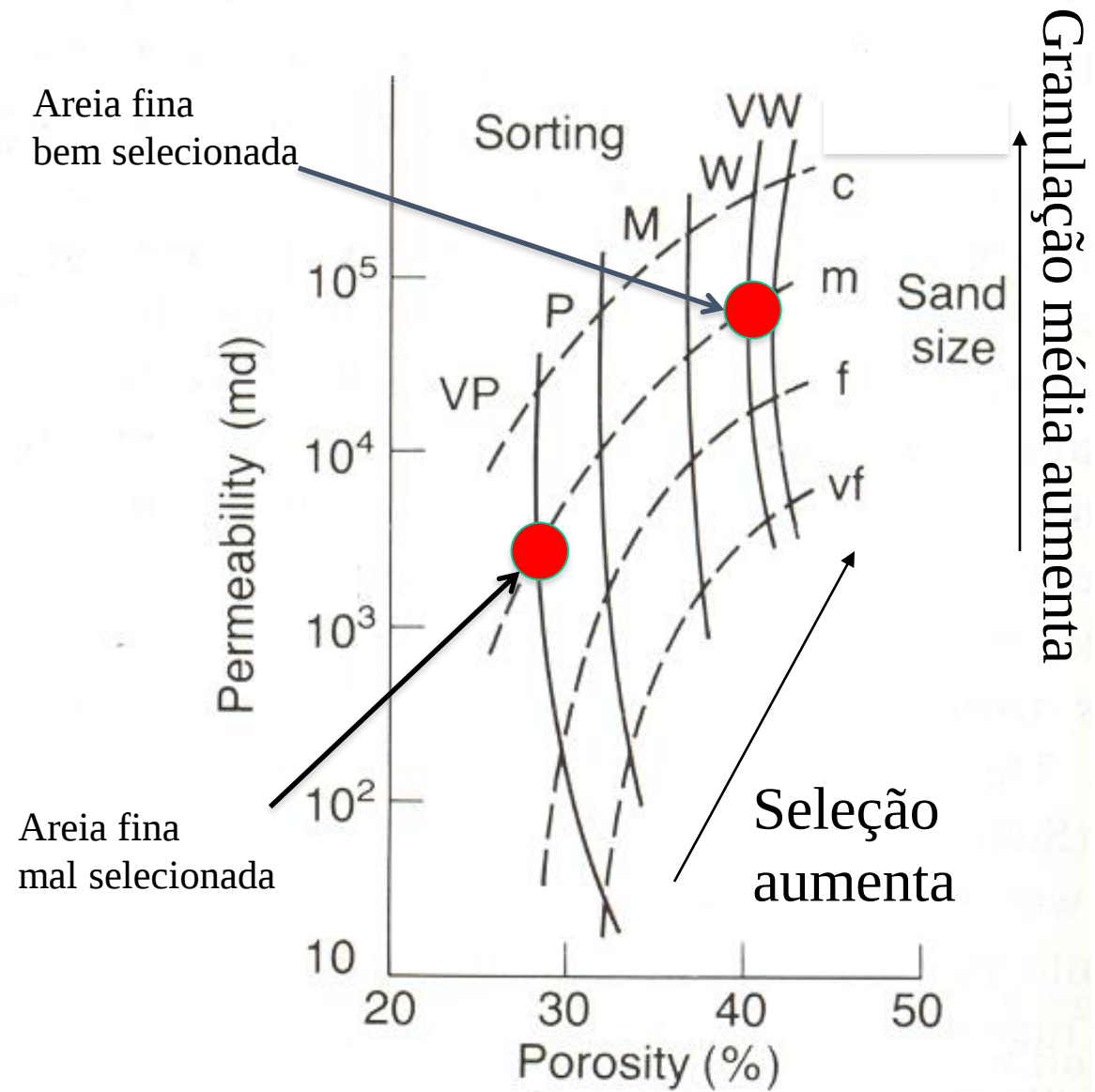
0.50



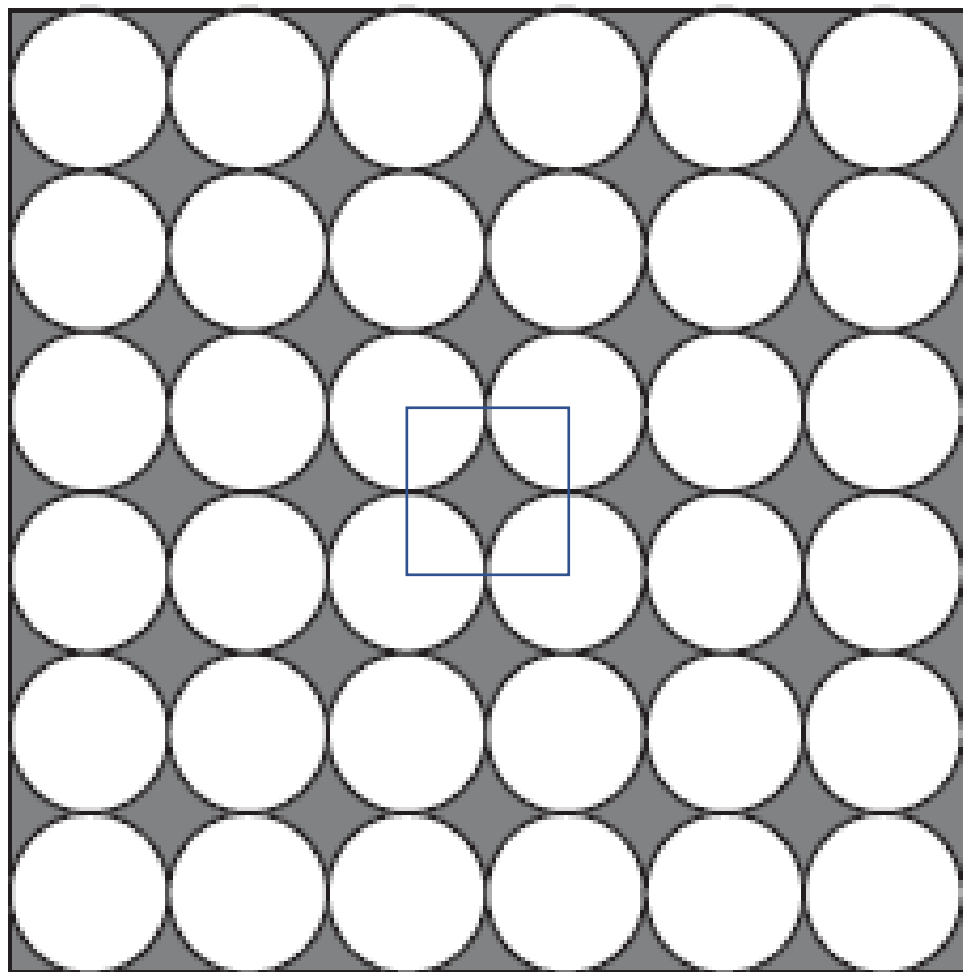
1.00



2.00

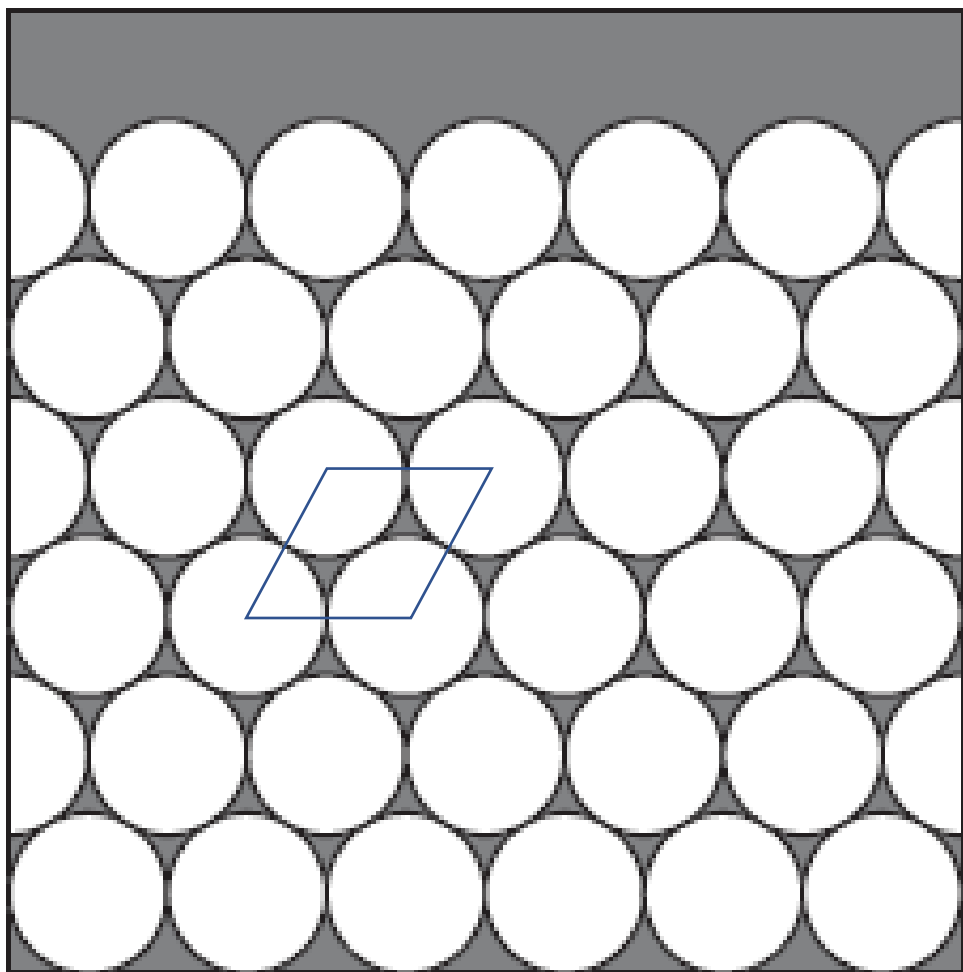


Empacotamento do arcabouço



loose packing - pre-compaction

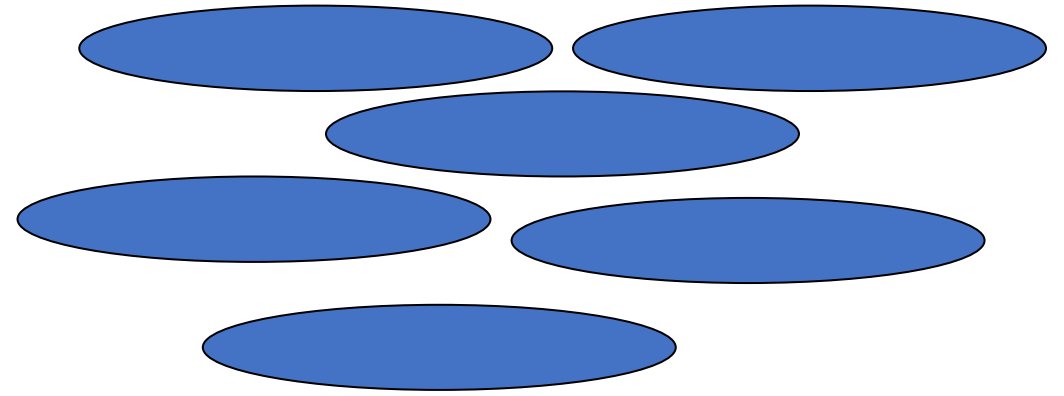
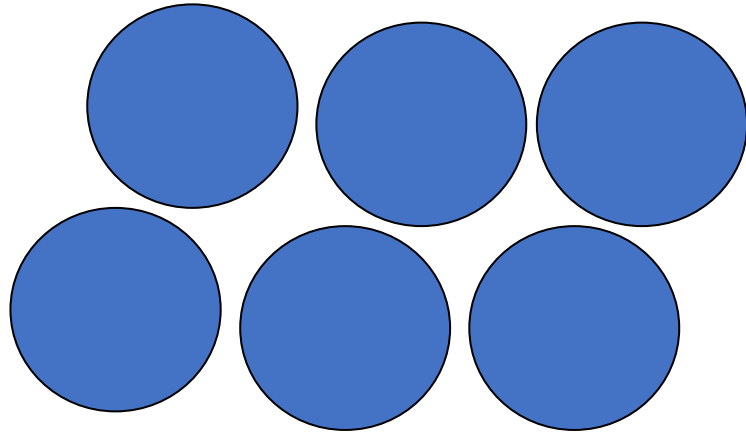
Empacotamento cúbico ($\phi = 48\%$)



tight packing - post-compaction

Empacotamento romboédrico ($\phi = 26\%$)

Forma dos grãos do arcabouço



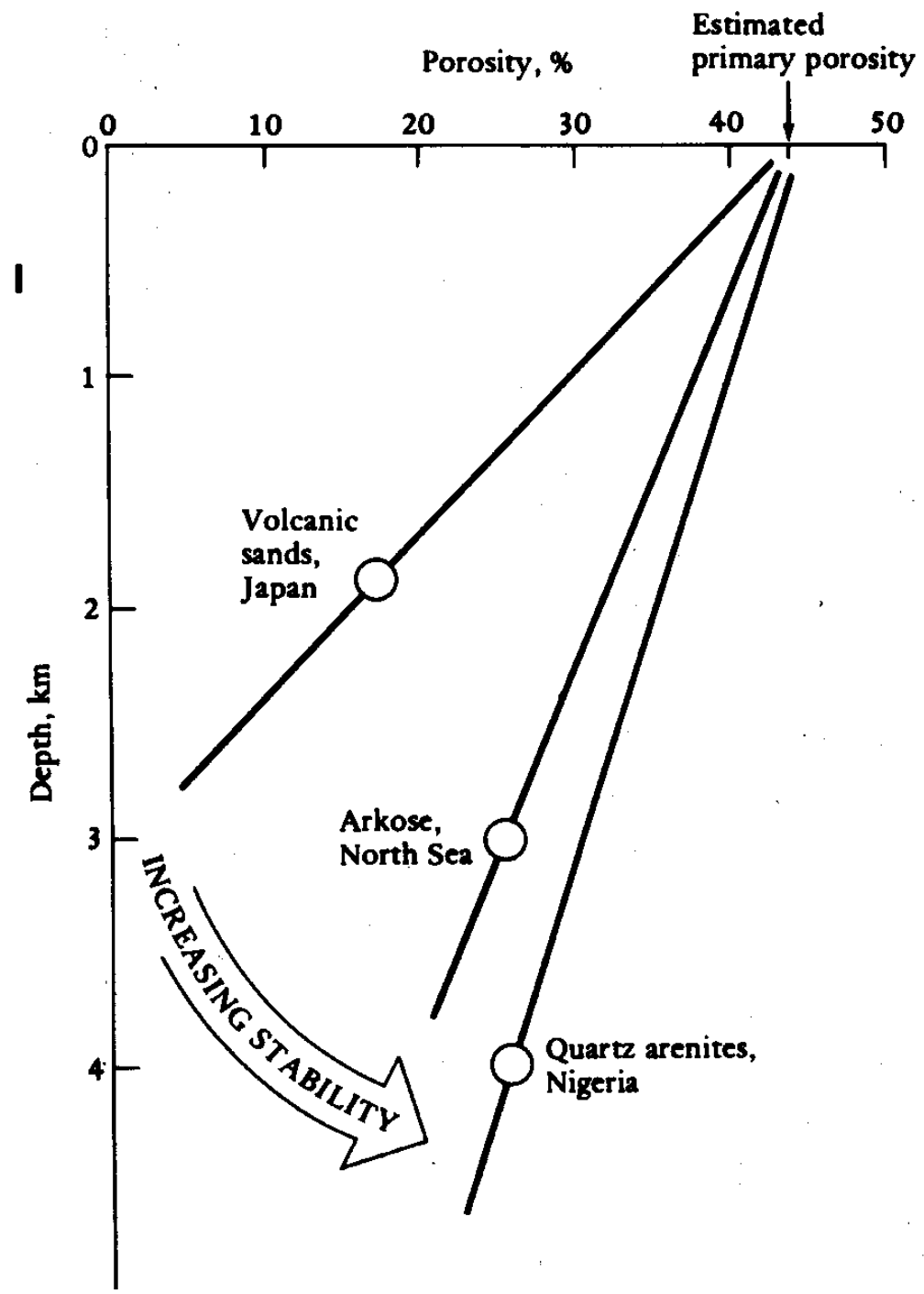
ϕ e K
vs.
Fácies



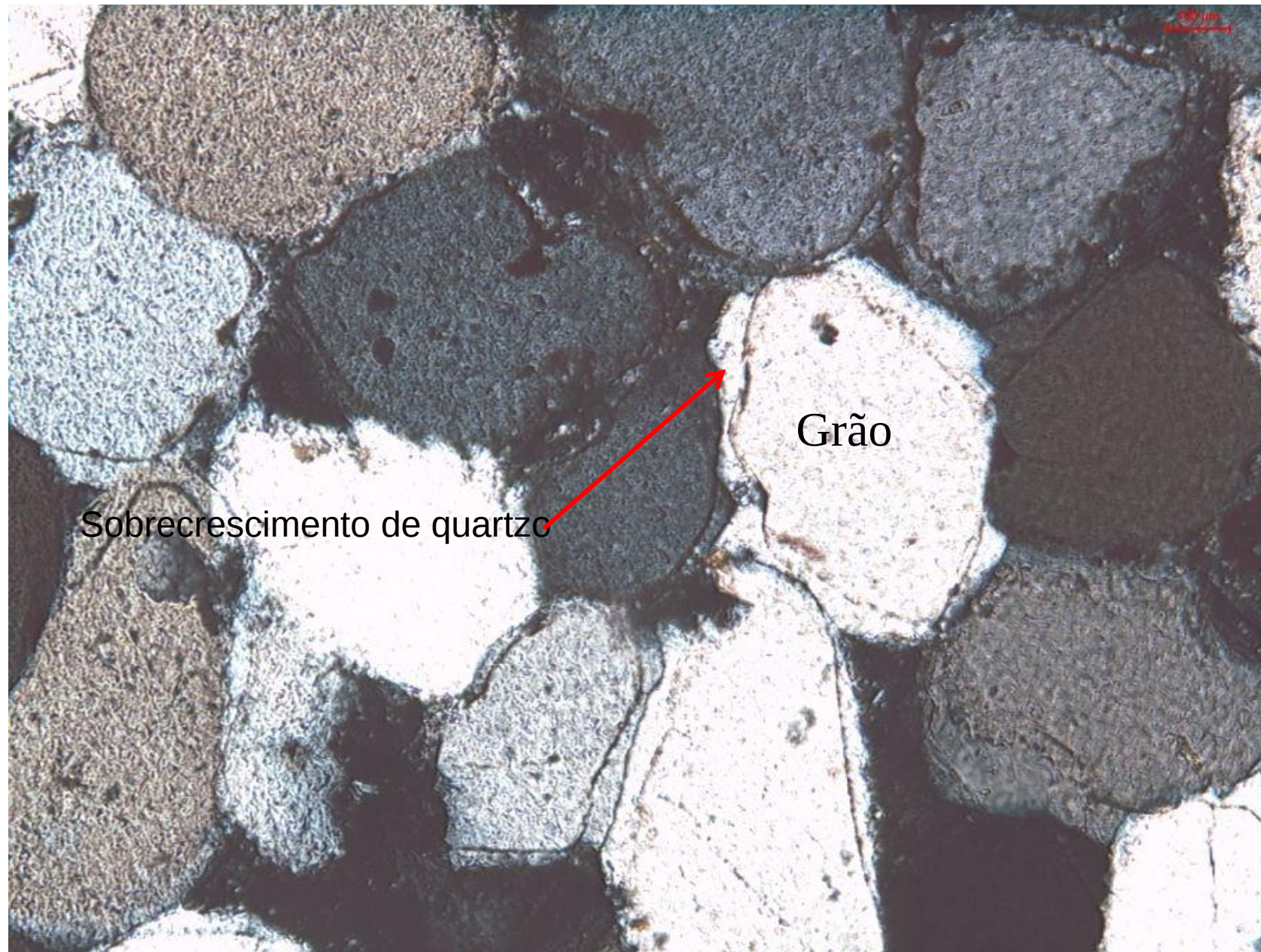
Alteração diagenética da porosidade

Influência da composição do arcabouço na porosidade primária

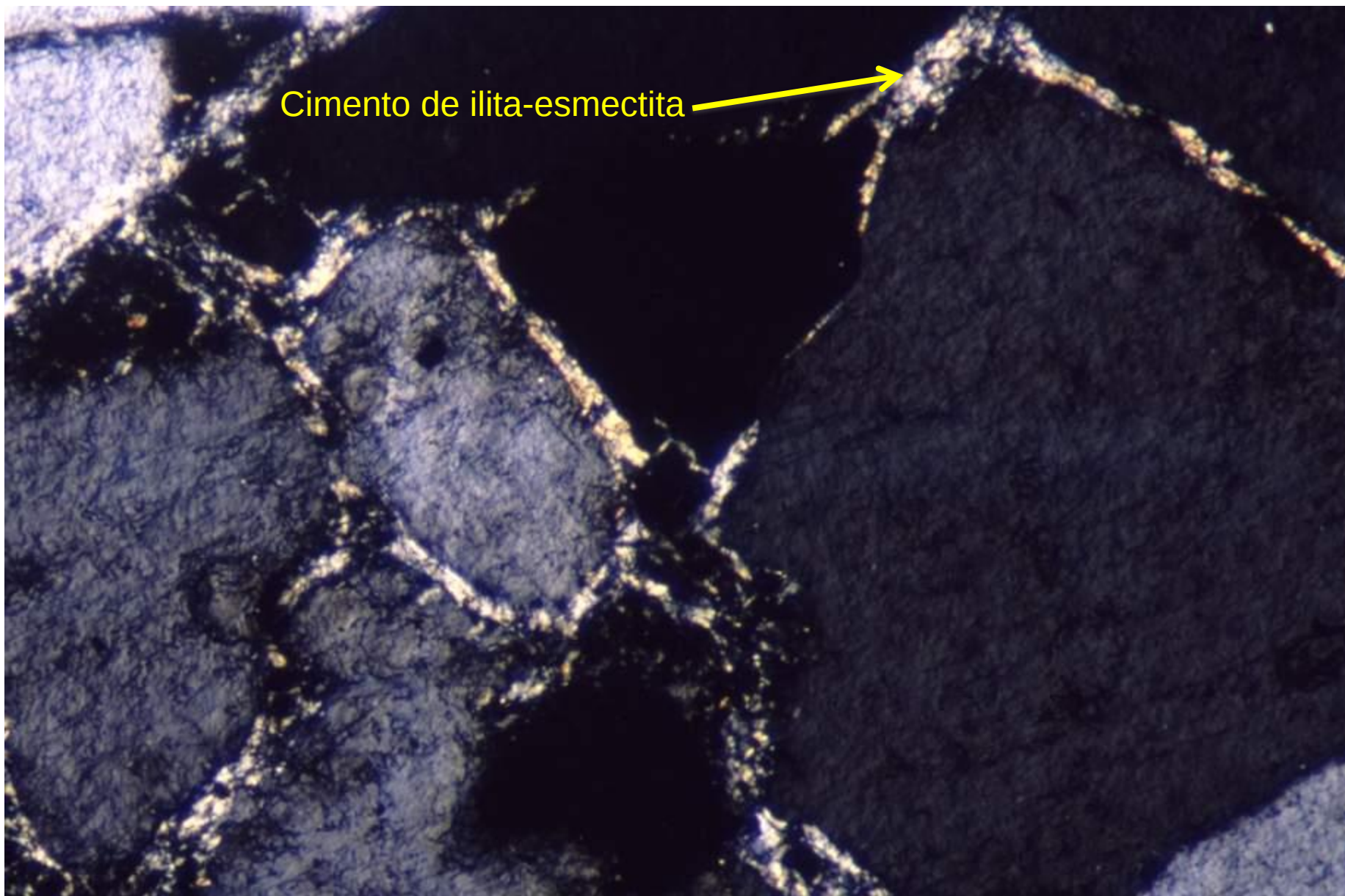




Cimentação

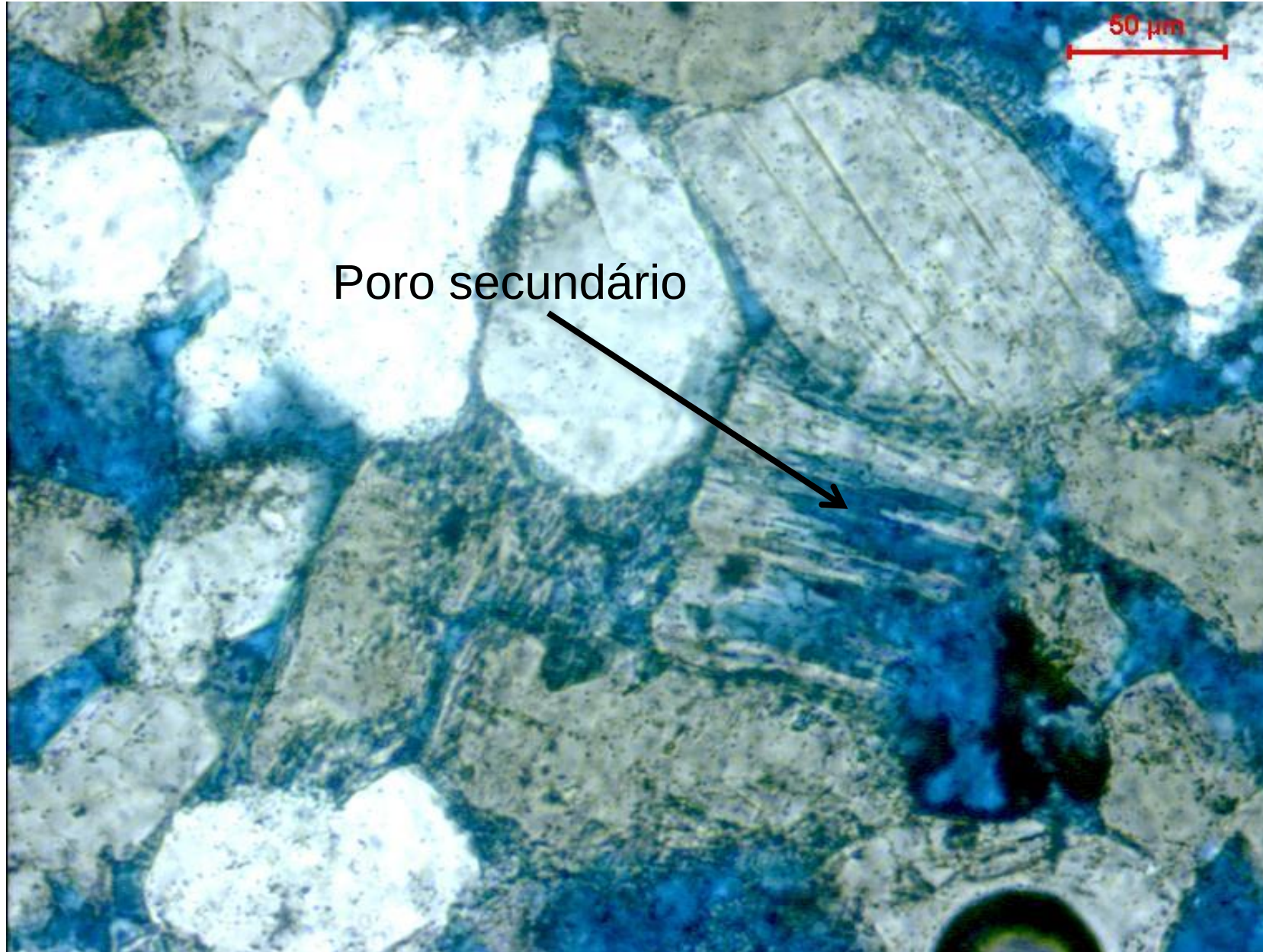


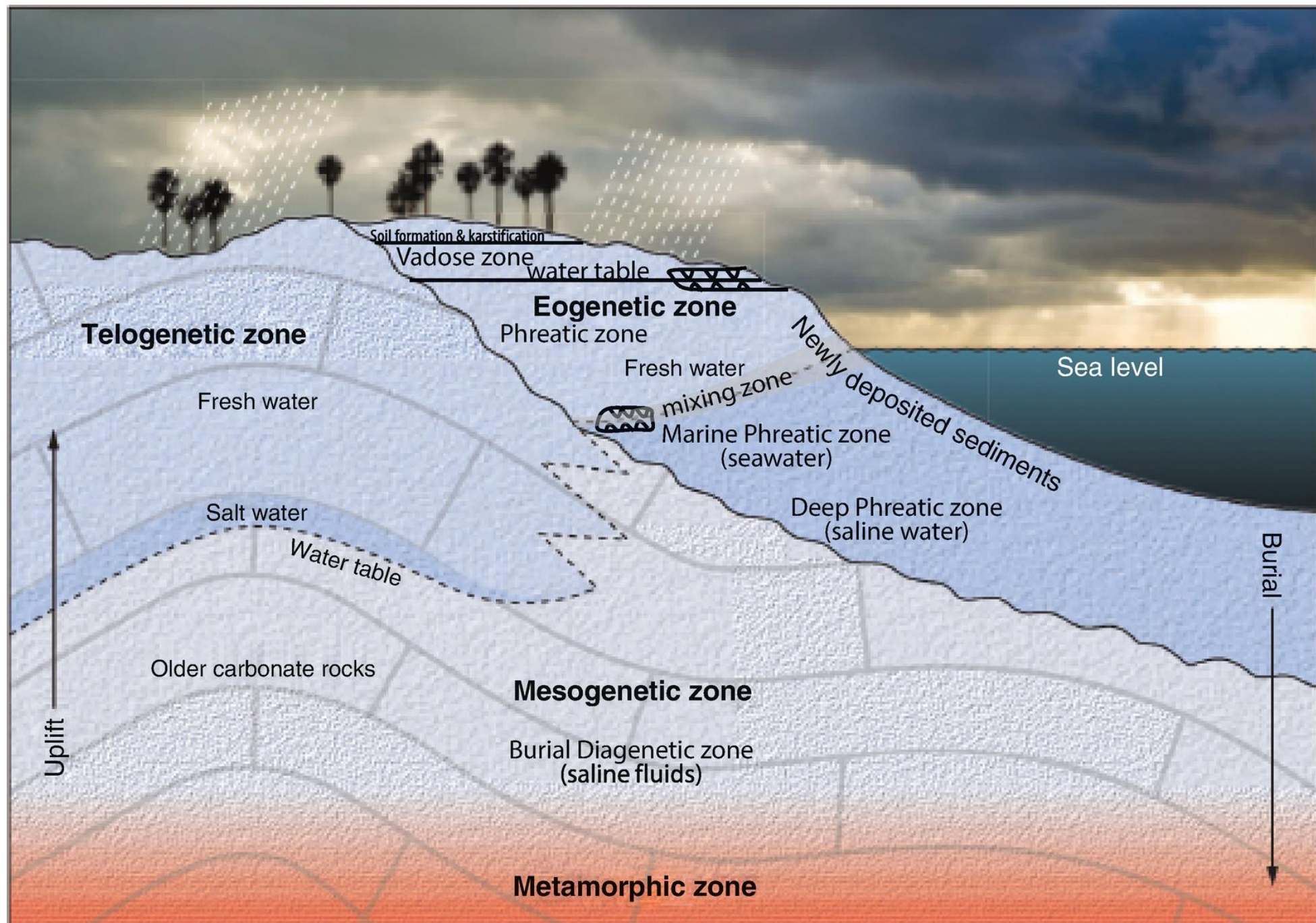




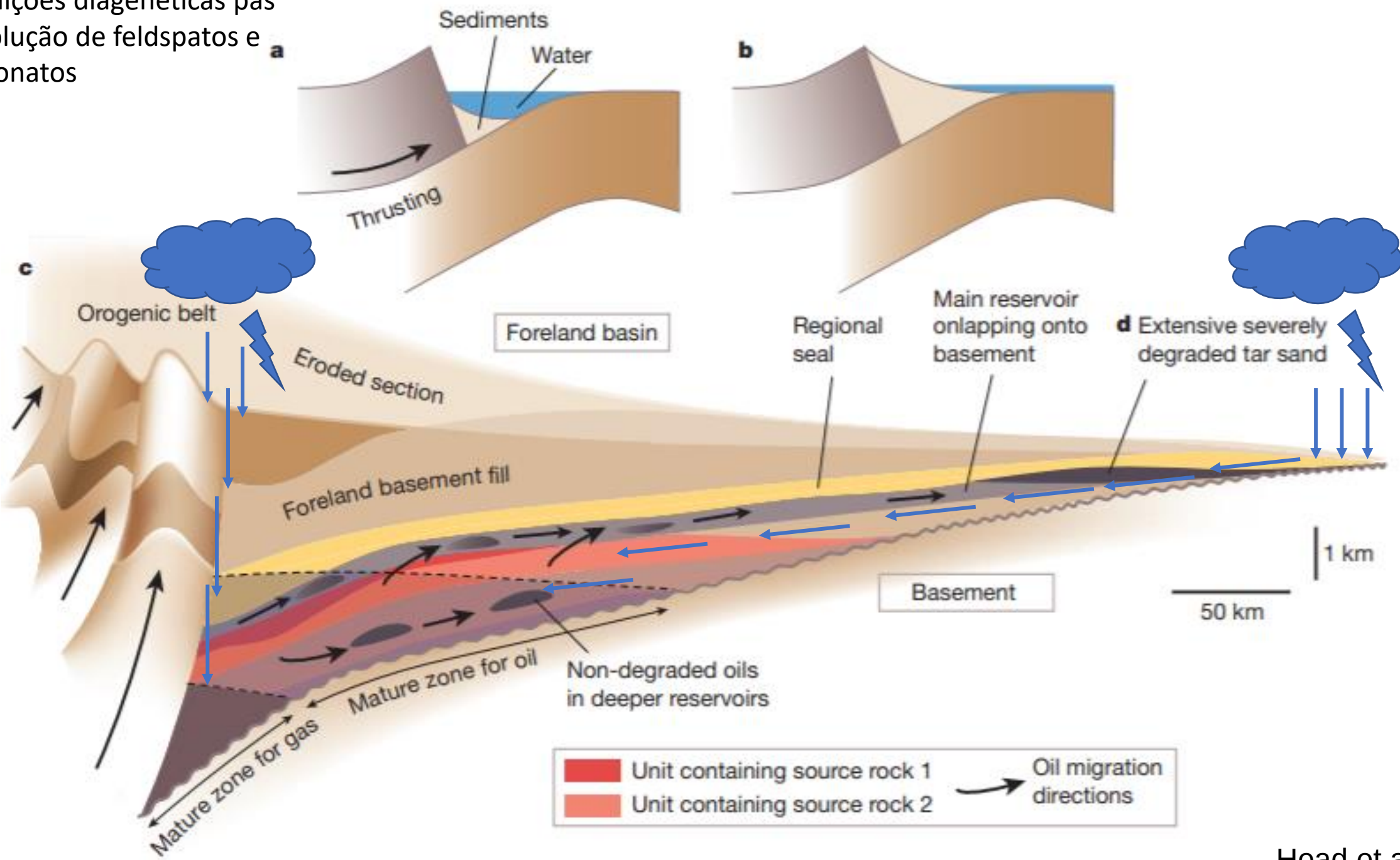
Cimento de illita-esmectita

Dissolução pós-deposicional





Condições diagenéticas pas
dissolução de feldspatos e
carbonatos



Métodos para medir a porosidade

Método da densidade

$$\emptyset = \frac{\rho_{ma} - \rho_b}{\rho_{ma} - \rho_f} \times 100$$

ρ_b : densidade da rocha

ρ_{ma} : densidade dos componente minerais da rocha
(arcabouço, matriz e cimento)

ρ_f : densidade do fluido

*Permite medidas *in situ* em camadas perfuradas por poços

Veja explicação em:

<https://www.youtube.com/watch?v=6j3jCqUPiCE>