



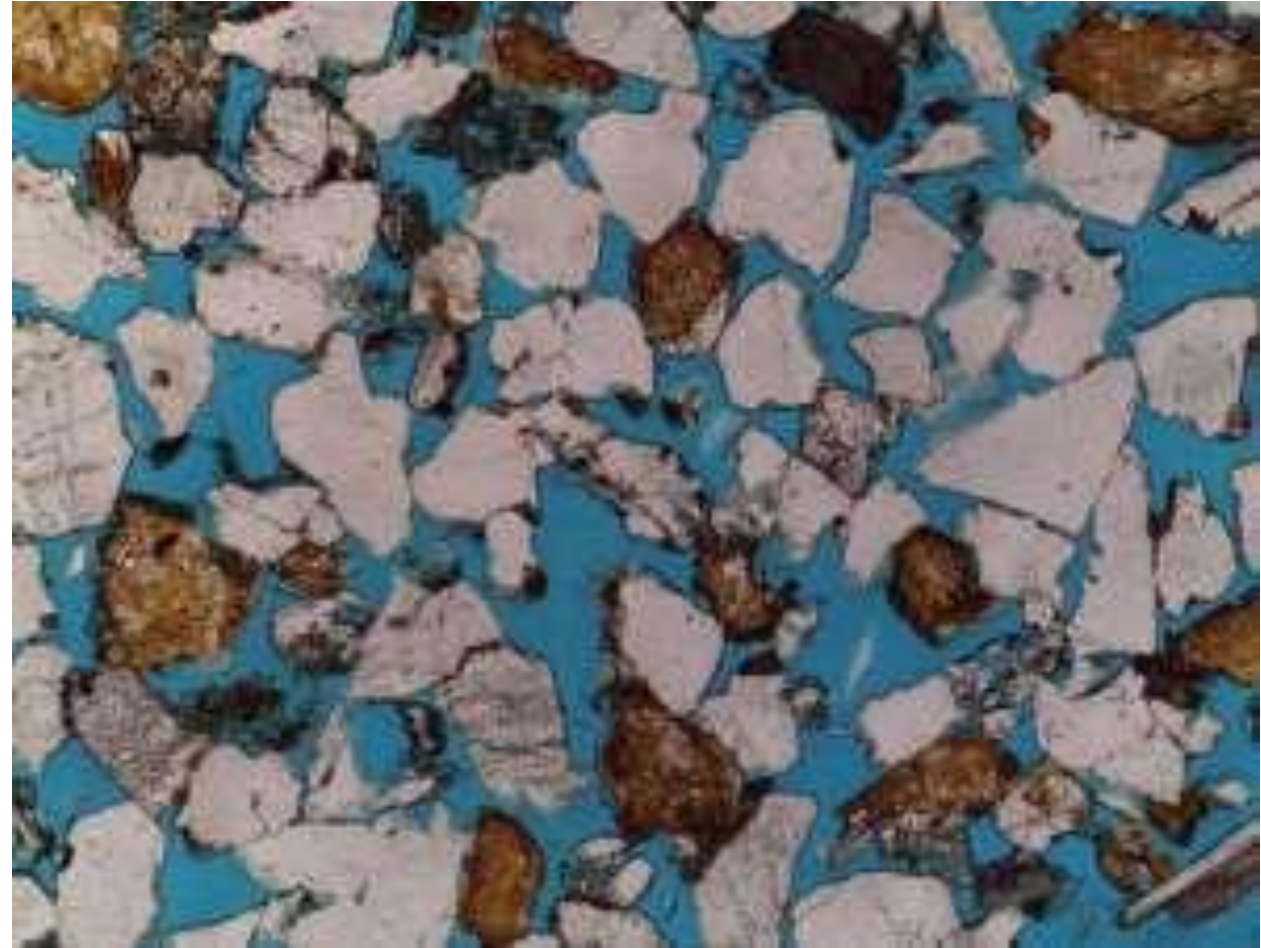
Porosity and Permeability

Liberty Educational Video



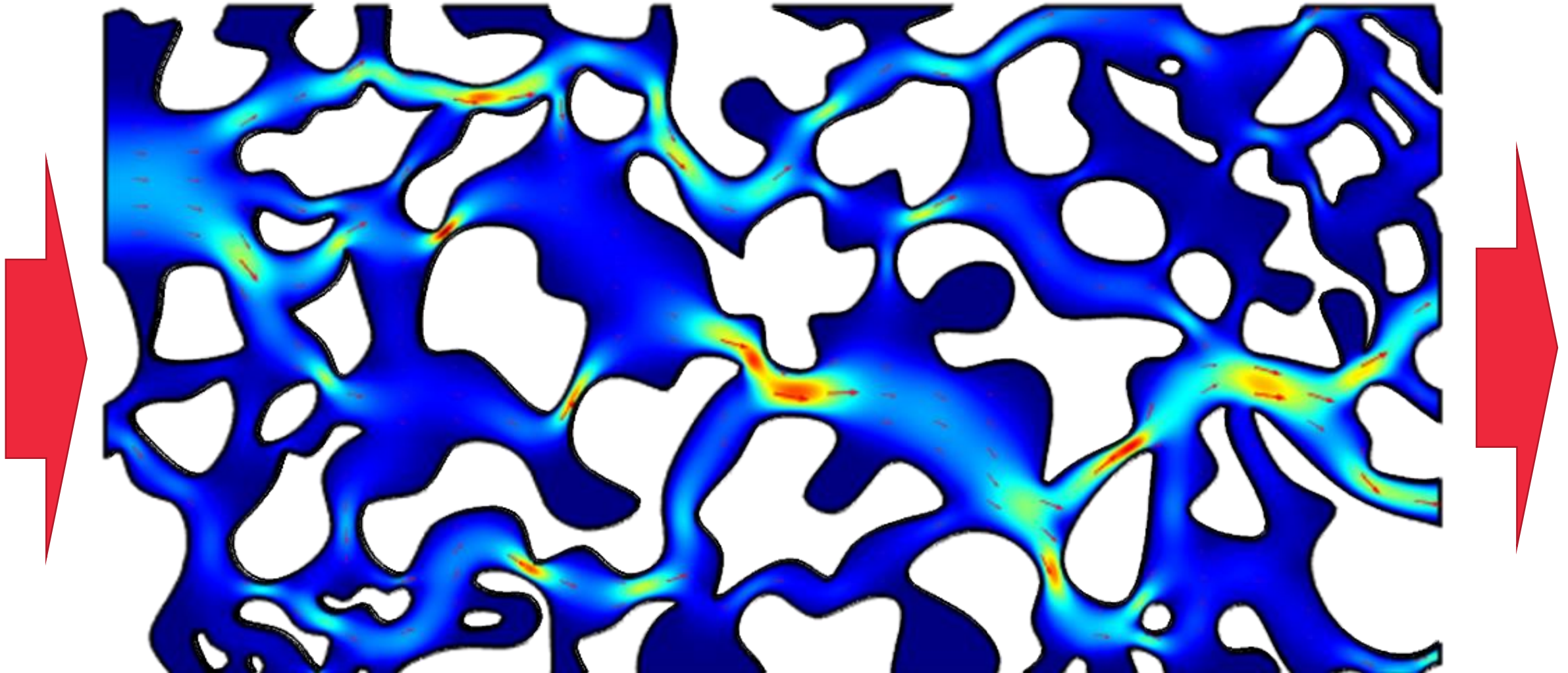
Porosity

- Fraction of open space in rock



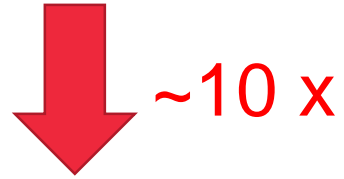
Permeability

- Ability of rock to support flow-through of liquid or gas



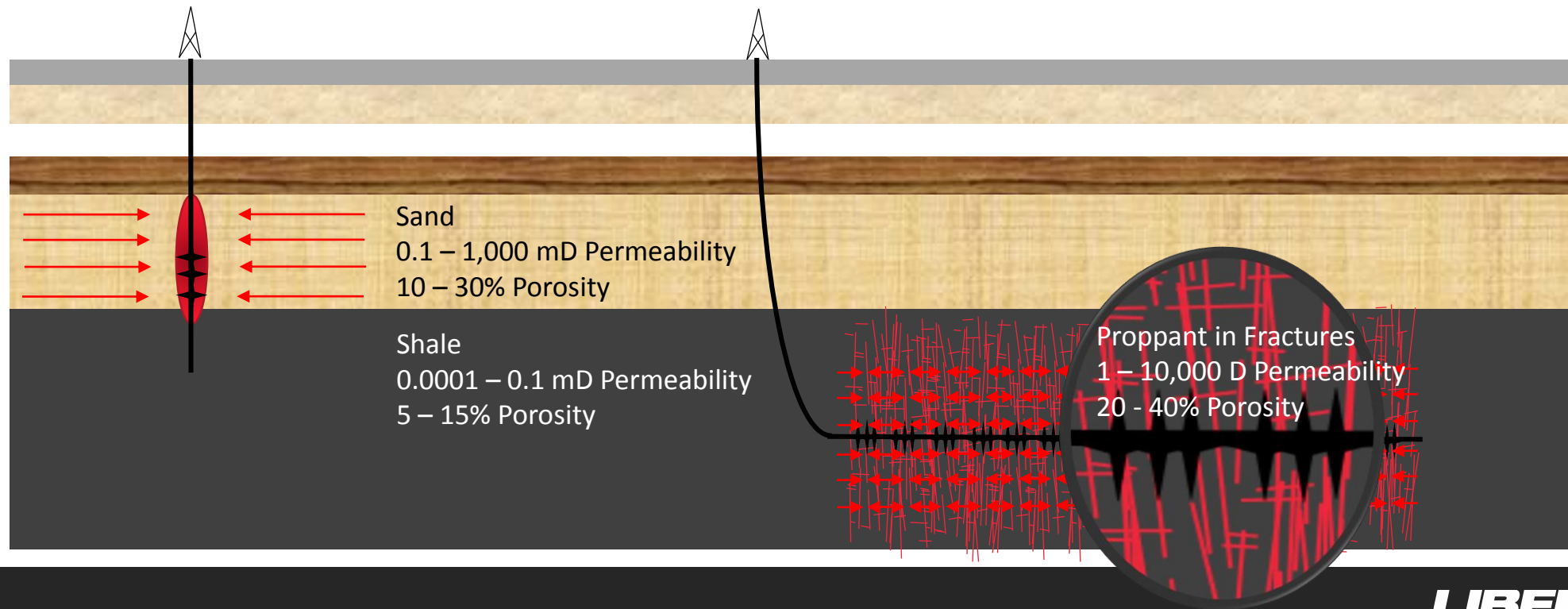
Test Results and Extrapolations for Rock

Test Tube	#1	#2	#3	#4
Particle Diameter (in)	0.50	0.16	0.03	0.01
Mesh	2	6	30	80
Application	Marbles	Steelshot	Proppant	



Permeability and Frac'ing

- This graphic represents conventional (sand) frac'ing and unconventional (shale) frac'ing
- Permeability spans many orders of magnitude
- Frac designs require adjustments driven by rock permeability





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