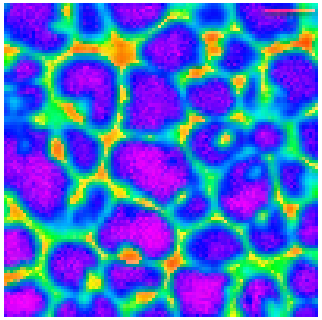
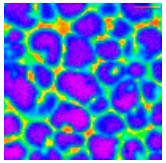
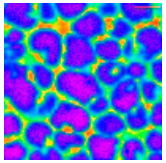
Fluidos Complexos





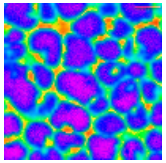
Resumo

- Quem são os Complexos?
- O que são os Complexos?
- Para onde vão os Complexos?



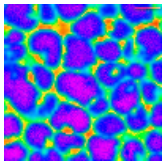
Quem são os Complexos?

Complexos Ontem (1996)



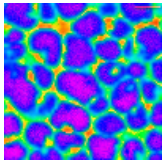
Marcia Barbosa, Alexandre Diehl, Mario Tamashiro
Yan Levin

Quem são os Complexos?



Quem são os Complexos?

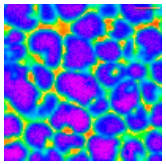
- Professores
  - Jeferson Arenzon, 2
  - Marcia Barbosa, 1C
  - Daniel Stariolo, 2
  - Yan Levin, 1C
- Doutorado: Aline Baladares, Alexandre Derivi, Alan Oliveira, Salete Pianegonda, Ana Ribeiro Teixeira, Marcelo Thielo
- Mestrado: Mateus Michelon, Lucas Nicolao, Marcia Szortyka
- Iniciação Científica: José F. Raymundi
- Técnico de Nível Superior: Henrique Marks



Colaborações

- Na UFRGS
  - Marco A. Idiart (IF)
  - Ana Paula Ravazzolo, Andrea von Groll (IV)

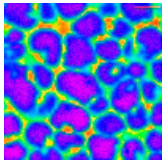
- No Rio Grande do Sul
  - Paulo Kuhn (UFPel)
  - Ney Lemke (Unisinos)
  - Paulo Netz (Ulbra/La Salle)
  - Adriana Camera (La Salle)



Colaborações

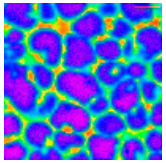
- No Brasil
  - Vera Henriques (USP)
  - Juergen Stilck (UFF), Daniel Barchi (UERJ)
  - Liacir Lucena, Marcelo Bruno (UFRN)
  - Alexandre Diehl (UFC)

- Na América Latina
  - F.A. Tamarit, S.A.Cannas,G. Fabricius -Argentina
  - R. Mulet -Cuba



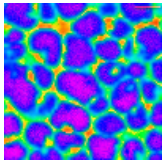
Colaborações

- No Europa
  - C. Holm, M. Deserno, R. Messina - Alemanha
  - Emmanuel Trizac - França
  - M. Sellitto, A. Fierro -Itália
- Nos Estados Unidos
  - H. E. Stanley, S. Buldyrev, F Starr -Boston
  - M. E. Fisher - Maryland



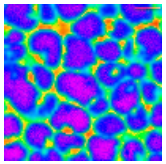
Resultados

- 190 artigos em revistas científicas
- 4 capítulos de livros
- 5 artigos de política científica
- 2000 citações

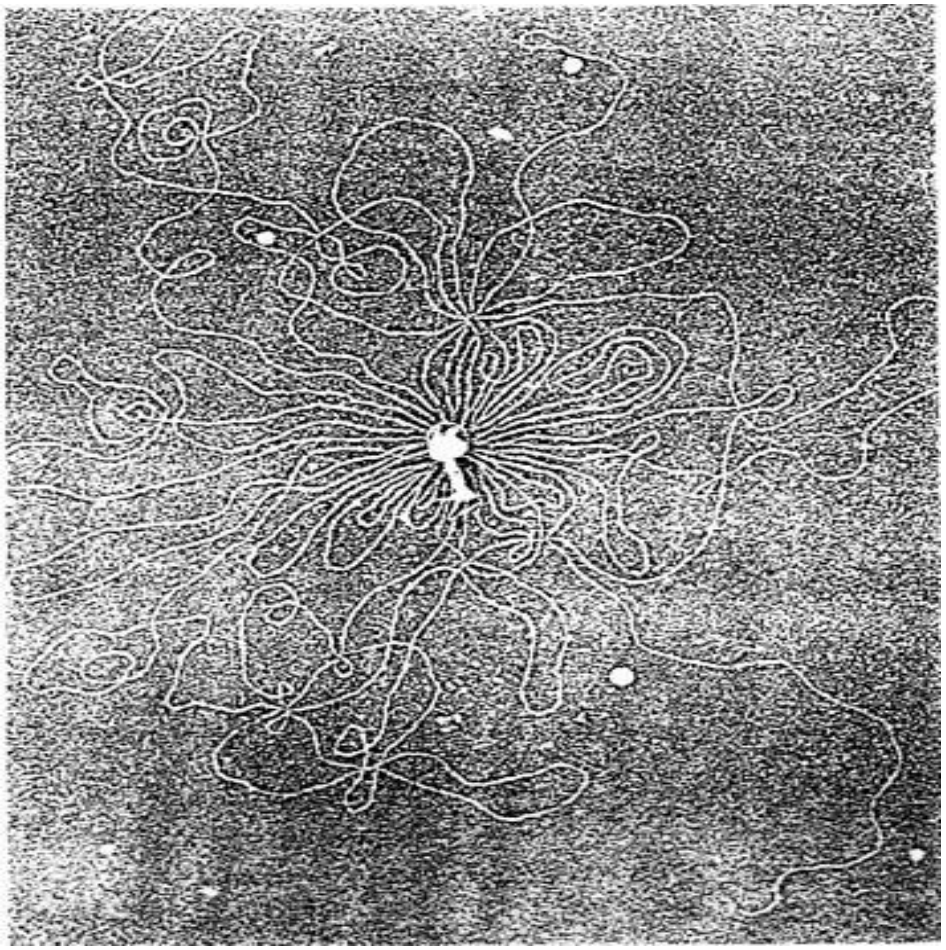


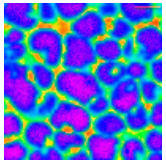
O que são Fluidos Complexos?

- Polímeros, Colóides, Surfactantes
- Água
- Vidros e Meios Granulares



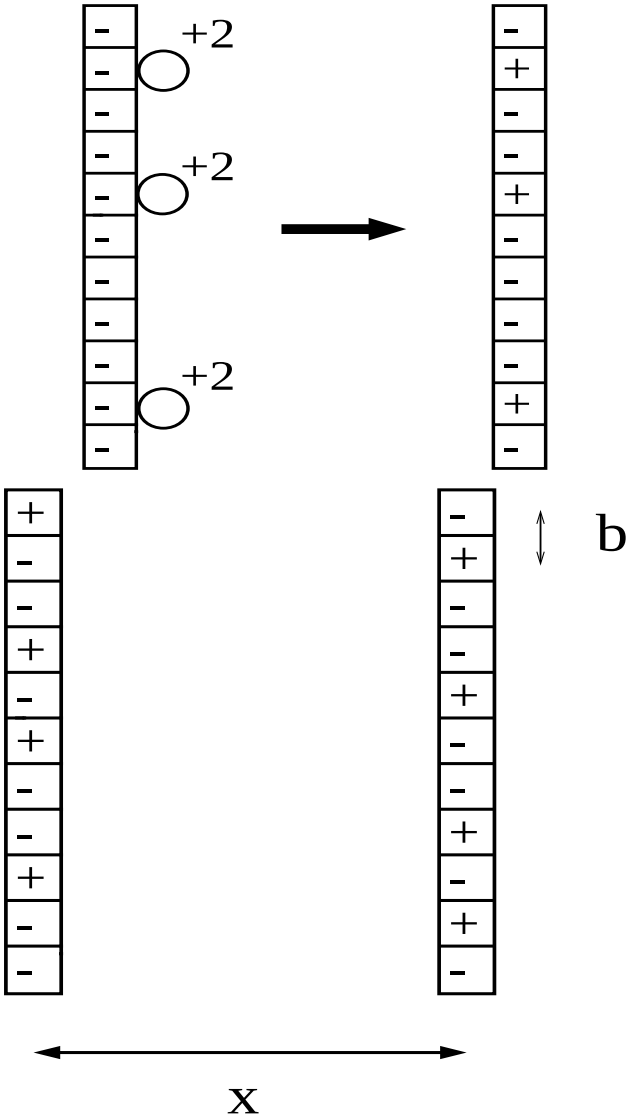
Atração Entre Iguais

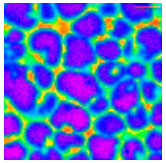




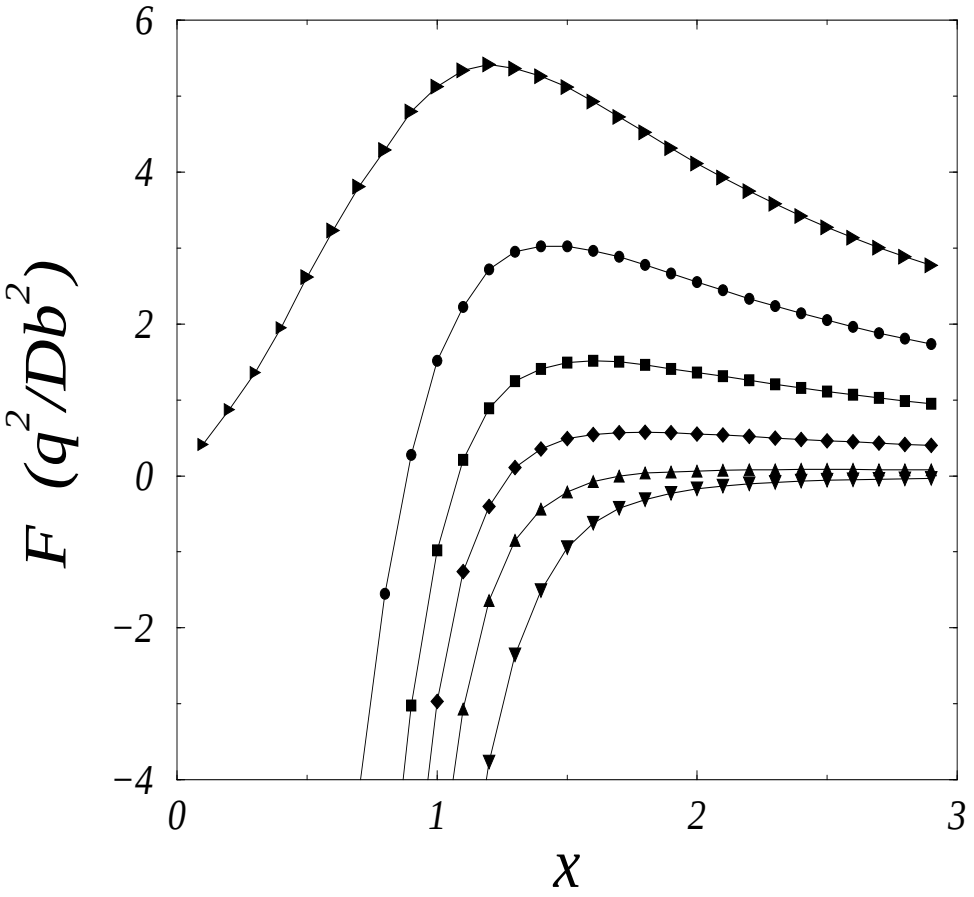
Virus : Pedaços de DNA atraem outros pedaços de DNA ambos negativamente carregados.

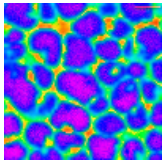
Atração Entre Iguais



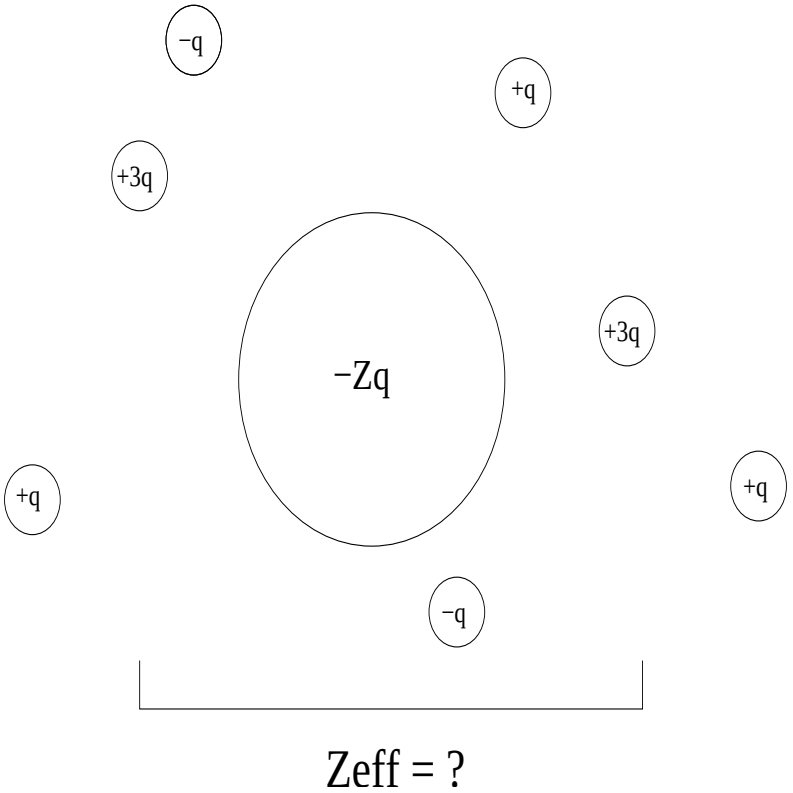


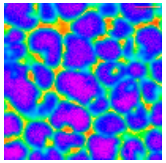
Atração Entre Iguais





Colóides Carregados



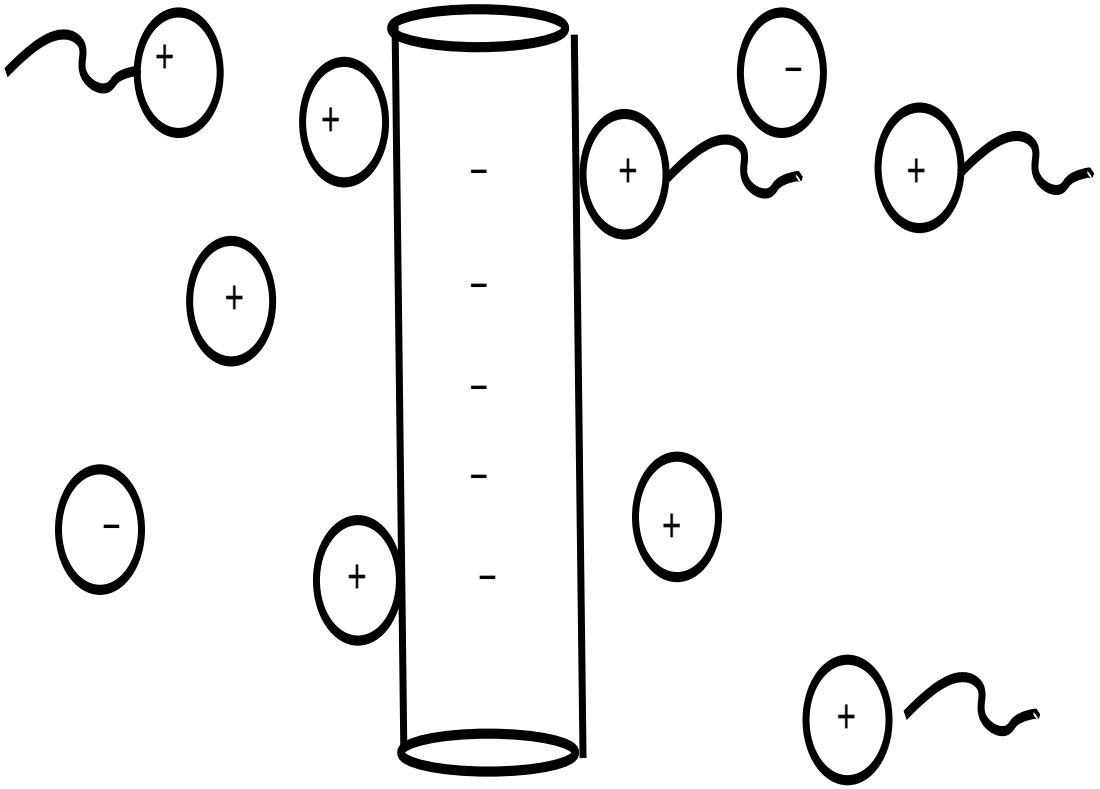


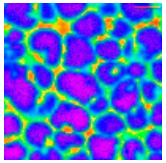
Qual a carga efetiva de um colóide em solução?

É possível manter uma dispersão coloidal estável?

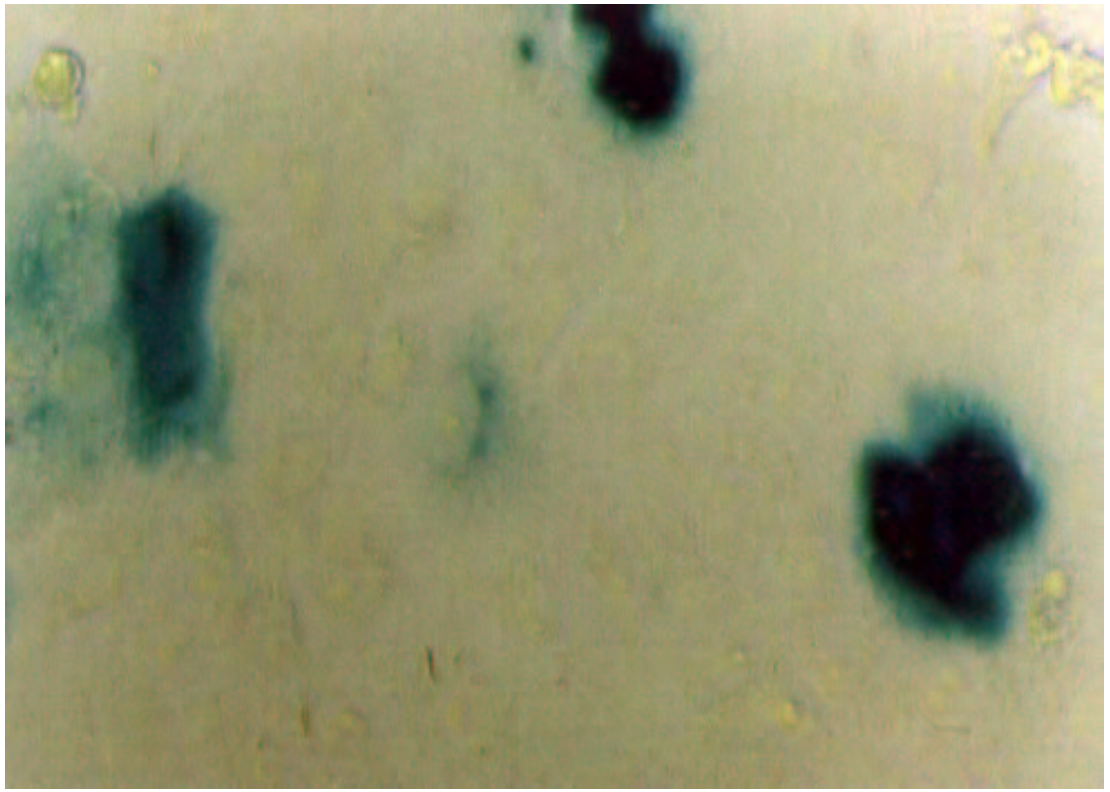
Sim se monovalente e em água.

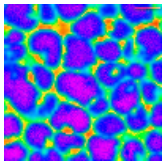
Terapia Genética





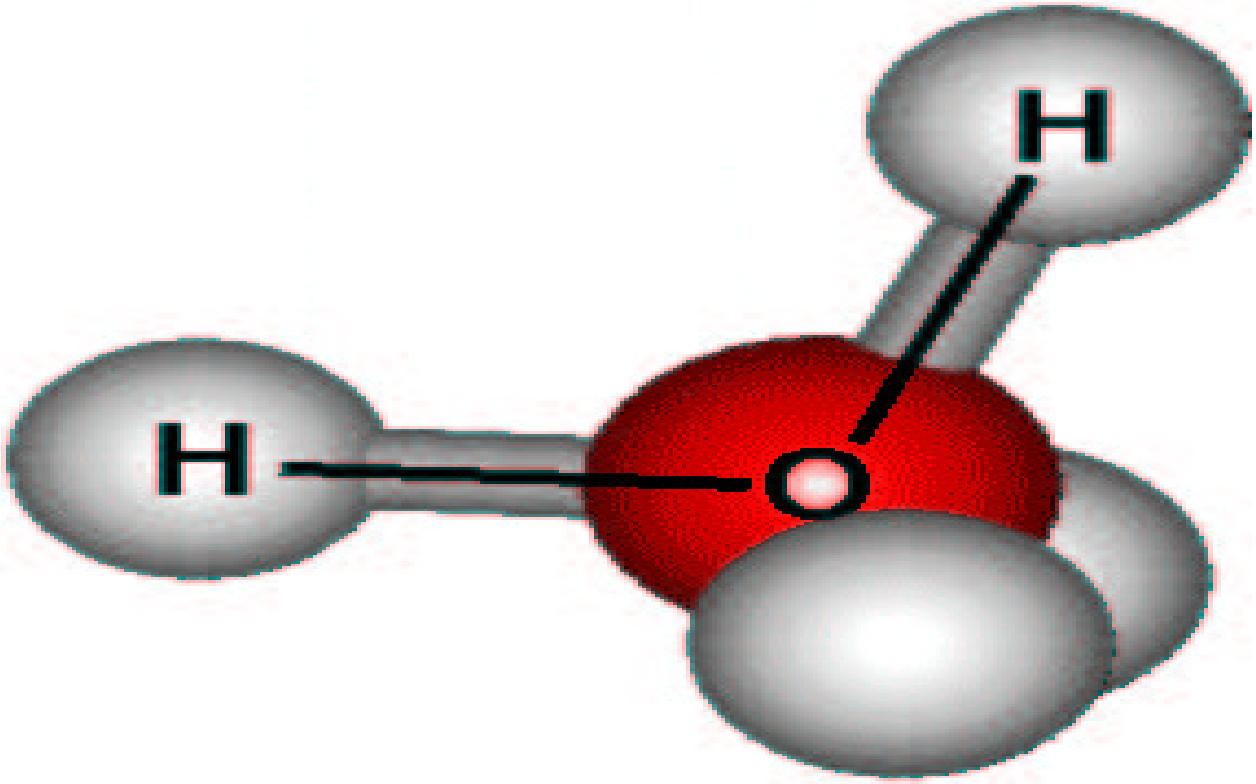
Terapia Genética



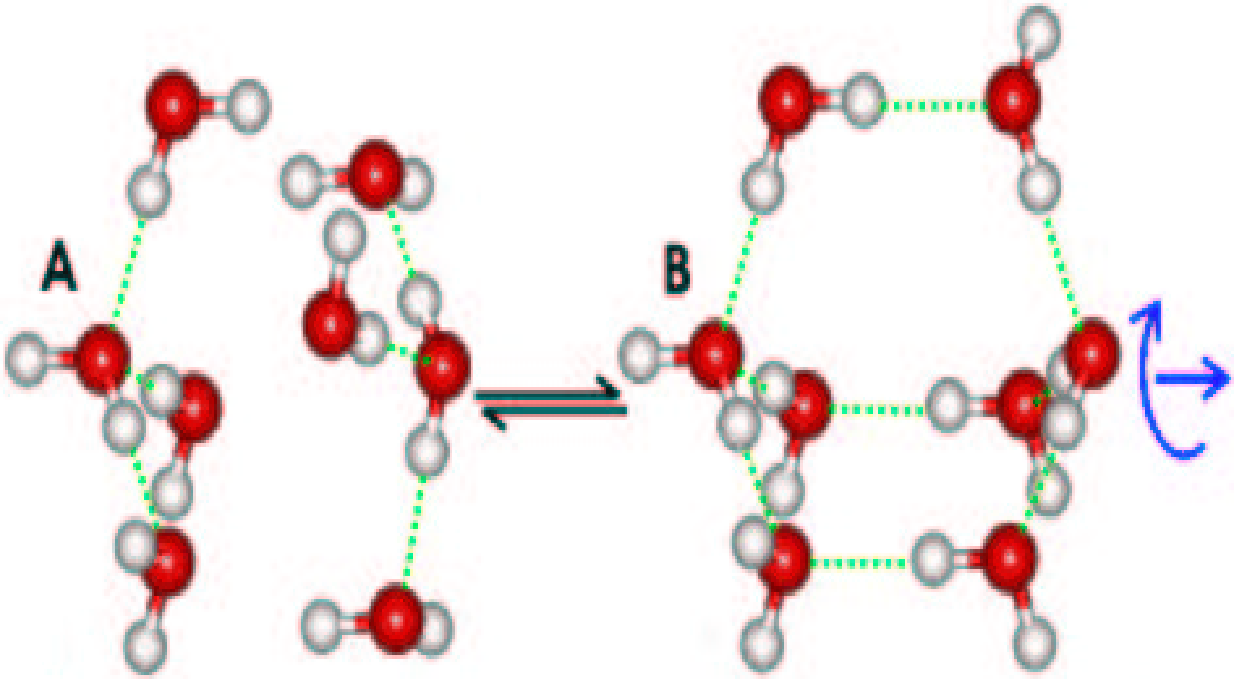


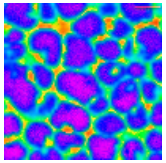
Tapete celular mostrando que o DNA entrou na células ativando a propriedade de luminescência.

Água



Água

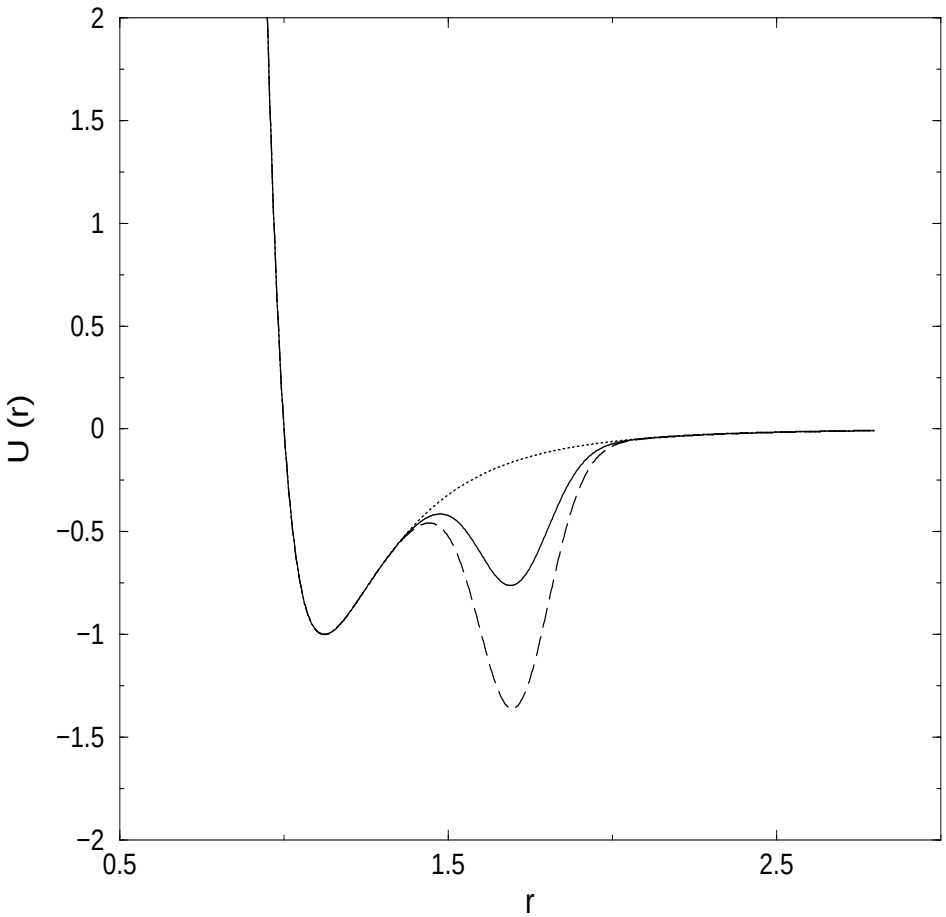


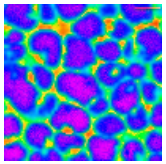


A água forma estruturas abertas e fechadas que competem.

Água

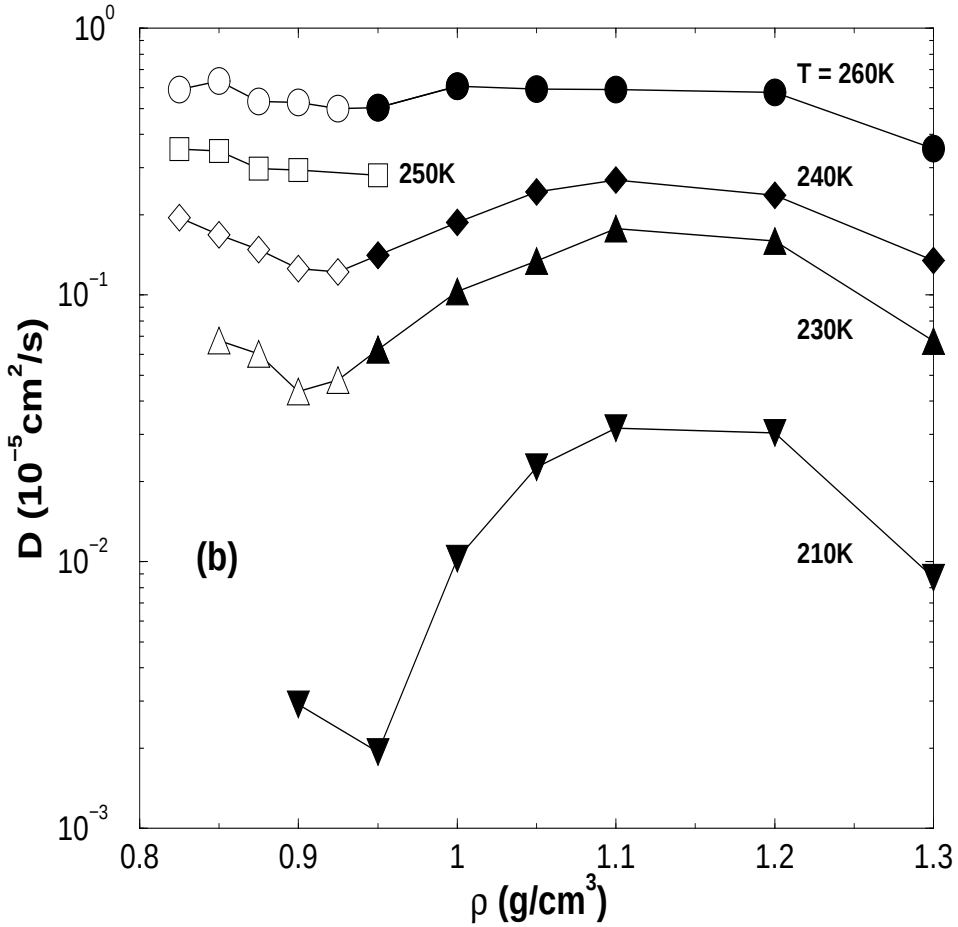
Que tipo de potencial apresenta duas fases líquidas e anomalias? Potenciais com duas escalas.

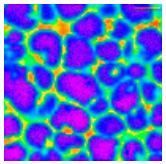




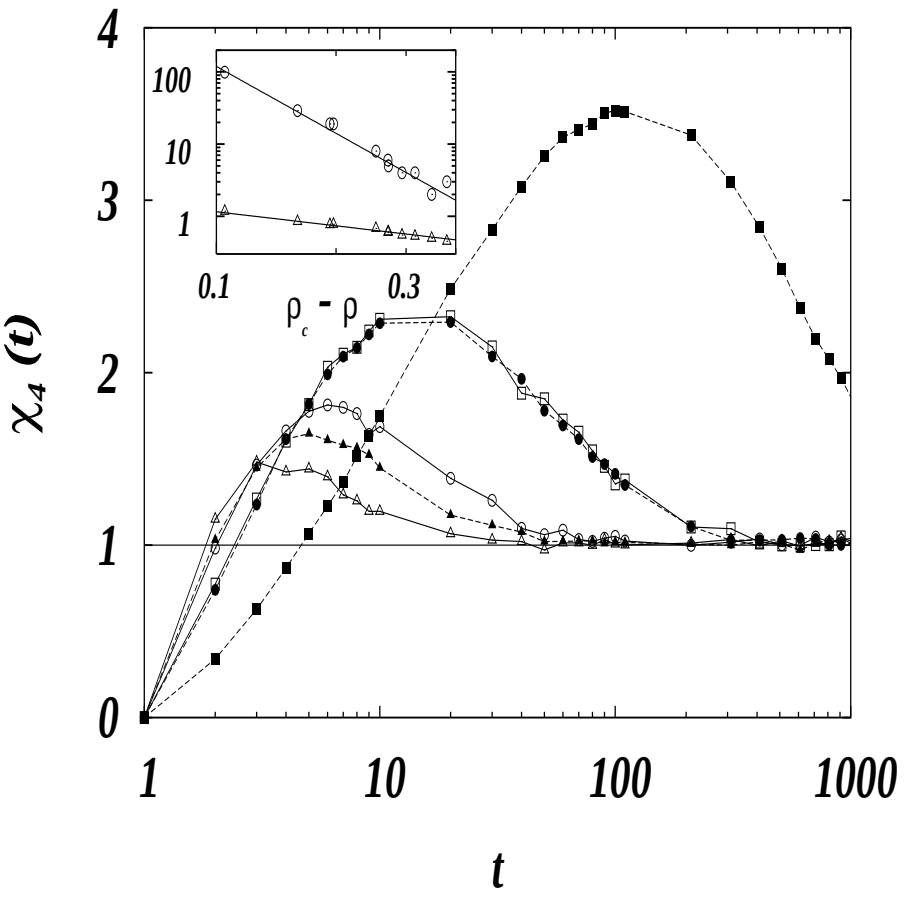
Água

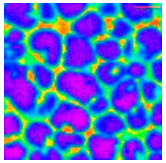
Descobrimos uma anomalia nova: a difusão que aumenta com o aumento da densidade





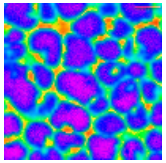
Vidros e Meios Granulares: Há criticalidade?





Para onde vão os Complexos

- Aplicações a Sistemas Biológicos: ”drug deliver”
- Dispersões coloidais e poliméricas com surfactantes: aplicações em química industrial
- ”Construir ” via potencial uma moléculas com as anomalias termodinâmicas e dinâmicas da água.



- Entender a Criticalidade Dinâmica dos Vidros