



# CARACTERIZAÇÃO DE BIOCERÂMICAS NANOESTRURURADAS: COMPORTAMENTO DE PARTÍCULAS EM SUSPENSÃO

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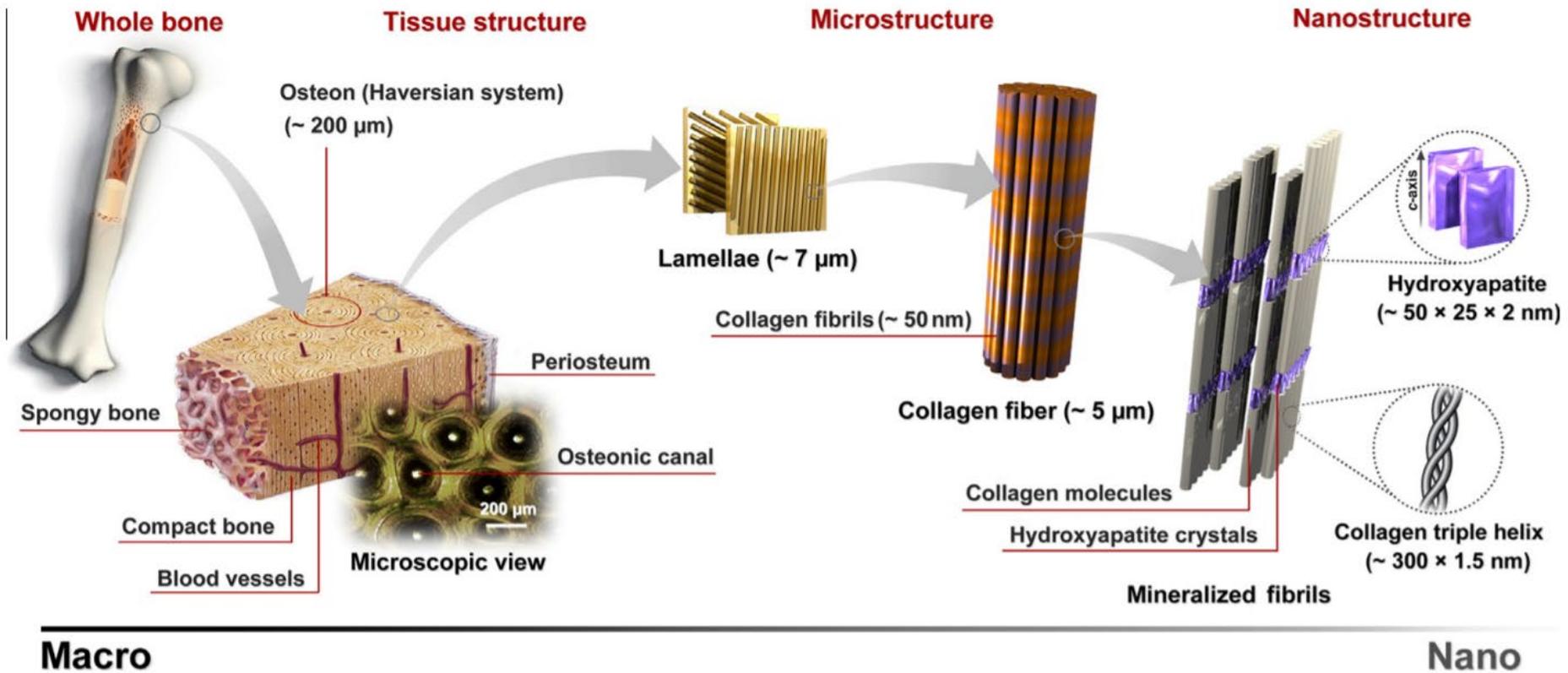
LABIOMAT – Laboratório de Biomateriais

CST – Processos Químicos/IFRJ

Centro Brasileiro de Pesquisas Físicas – R. Dr. Xavier Sigaud, 150 – Botafogo, Rio de Janeiro - RJ

# Hidroxiapatita

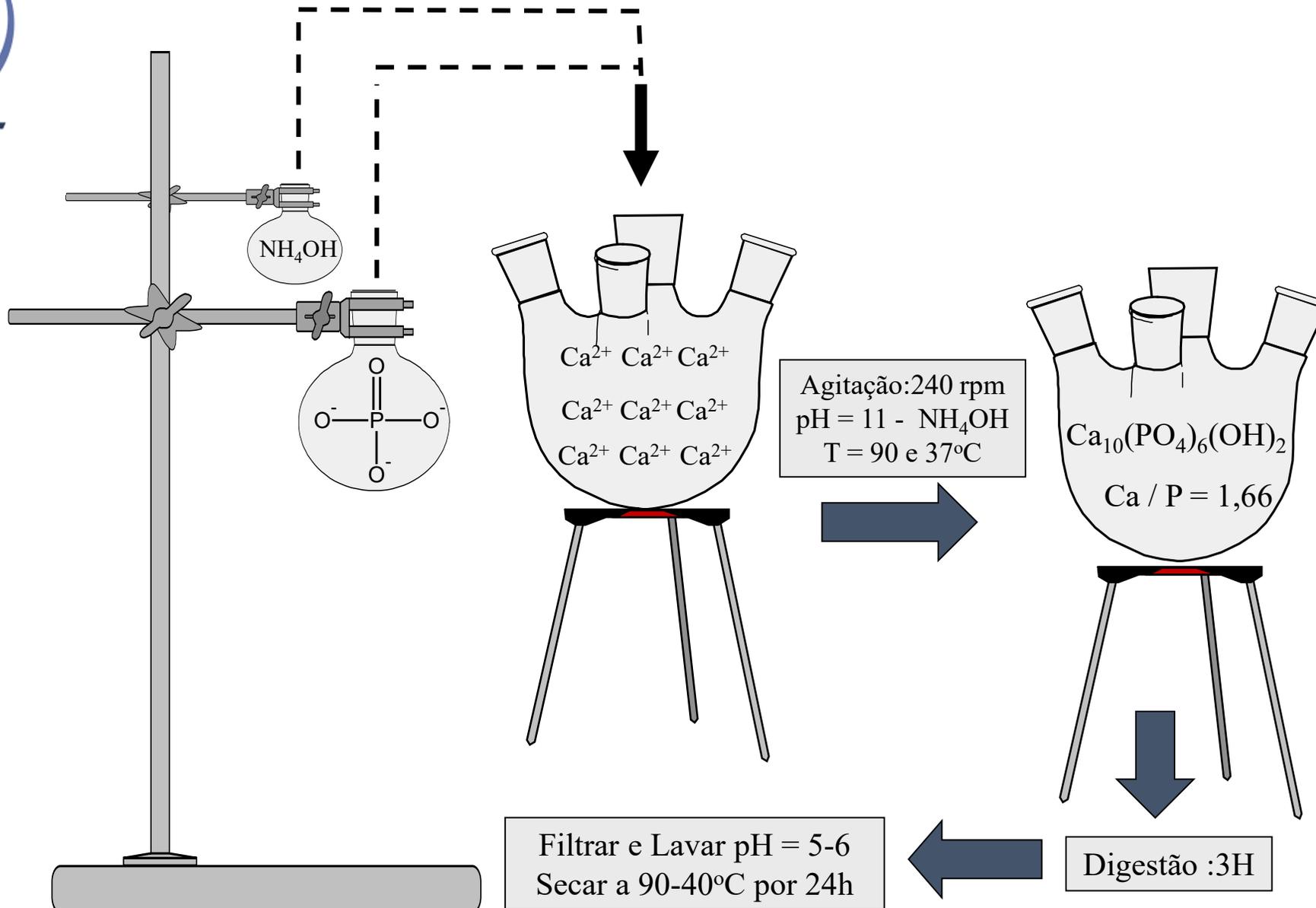
*M. Sadat-Shojai et al. / Acta Biomaterialia 9 (2013) 7591–7621*



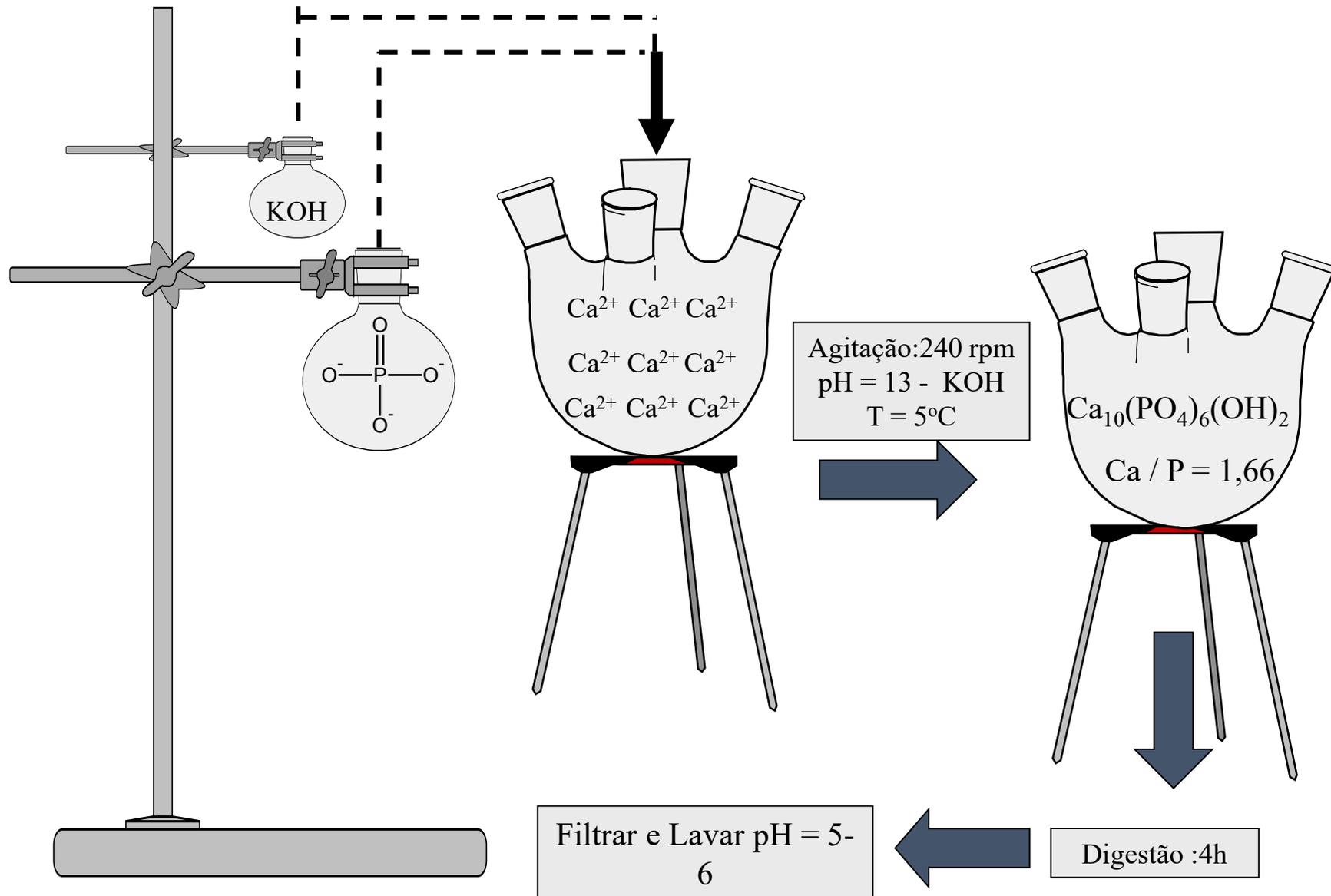
**Referência:**

SADAT-SHOJAI, Mehdi et al. Synthesis methods for nanosized hydroxyapatite with diverse structures. **Acta biomaterialia**, v. 9, n. 8, p. 7591-7621, 2013.

# Hidroxiapatita Nanoestruturada



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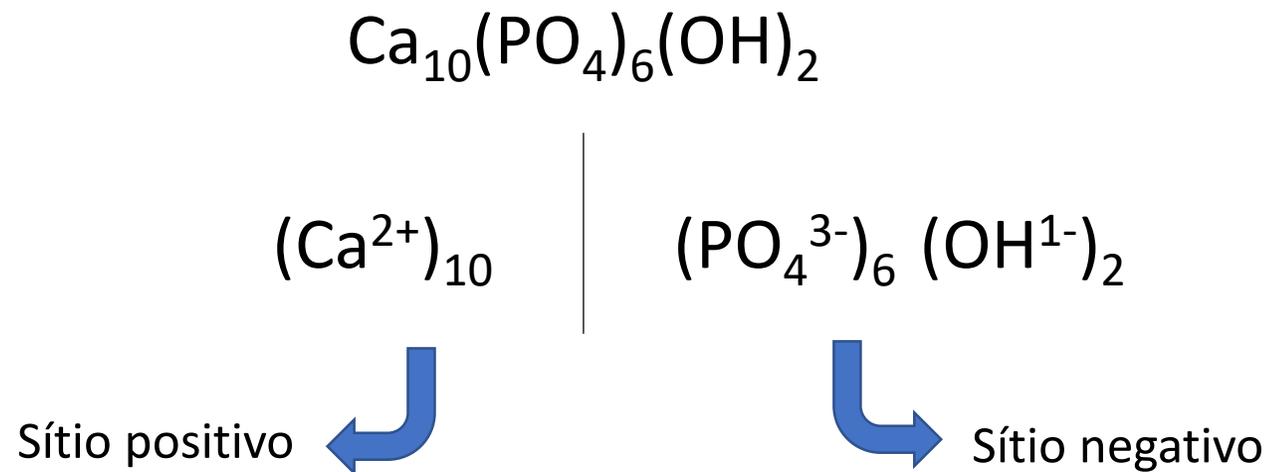
# Hidroxiapatita Nanoestruturada



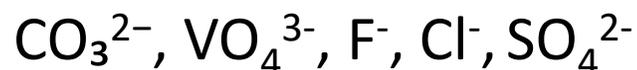
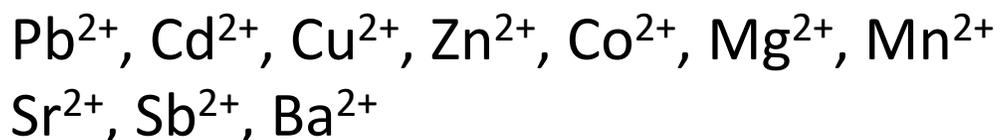


# Estrutura Hidroxiapatita Nanoestruturada

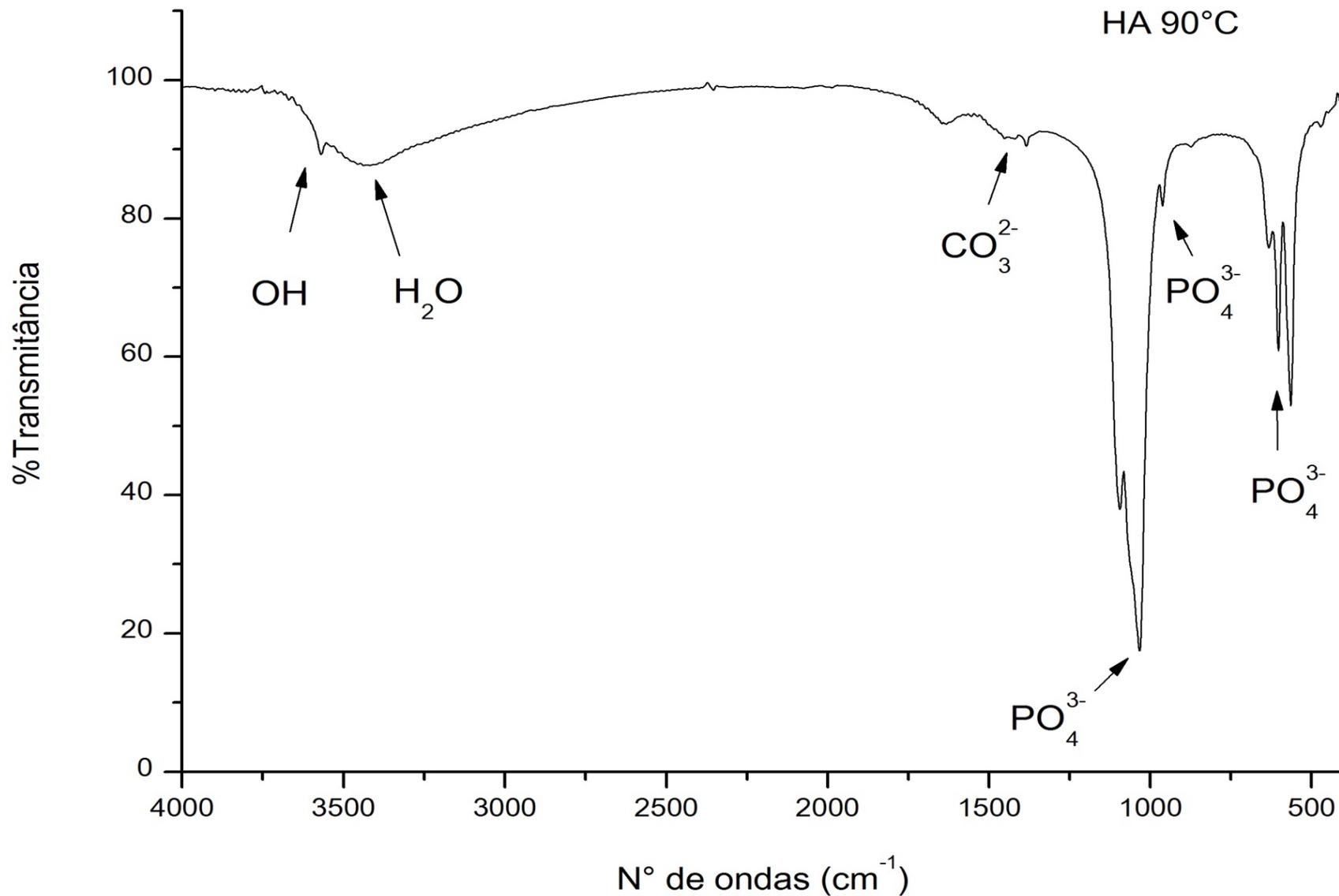
- Substituições alteram na estrutura:
  - Dimensões da rede dos cristais
  - Textura superficial
  - Estabilidade térmica
  - Solubilidade
  - Reatividade química
  - Comportamento do material no meio biológico



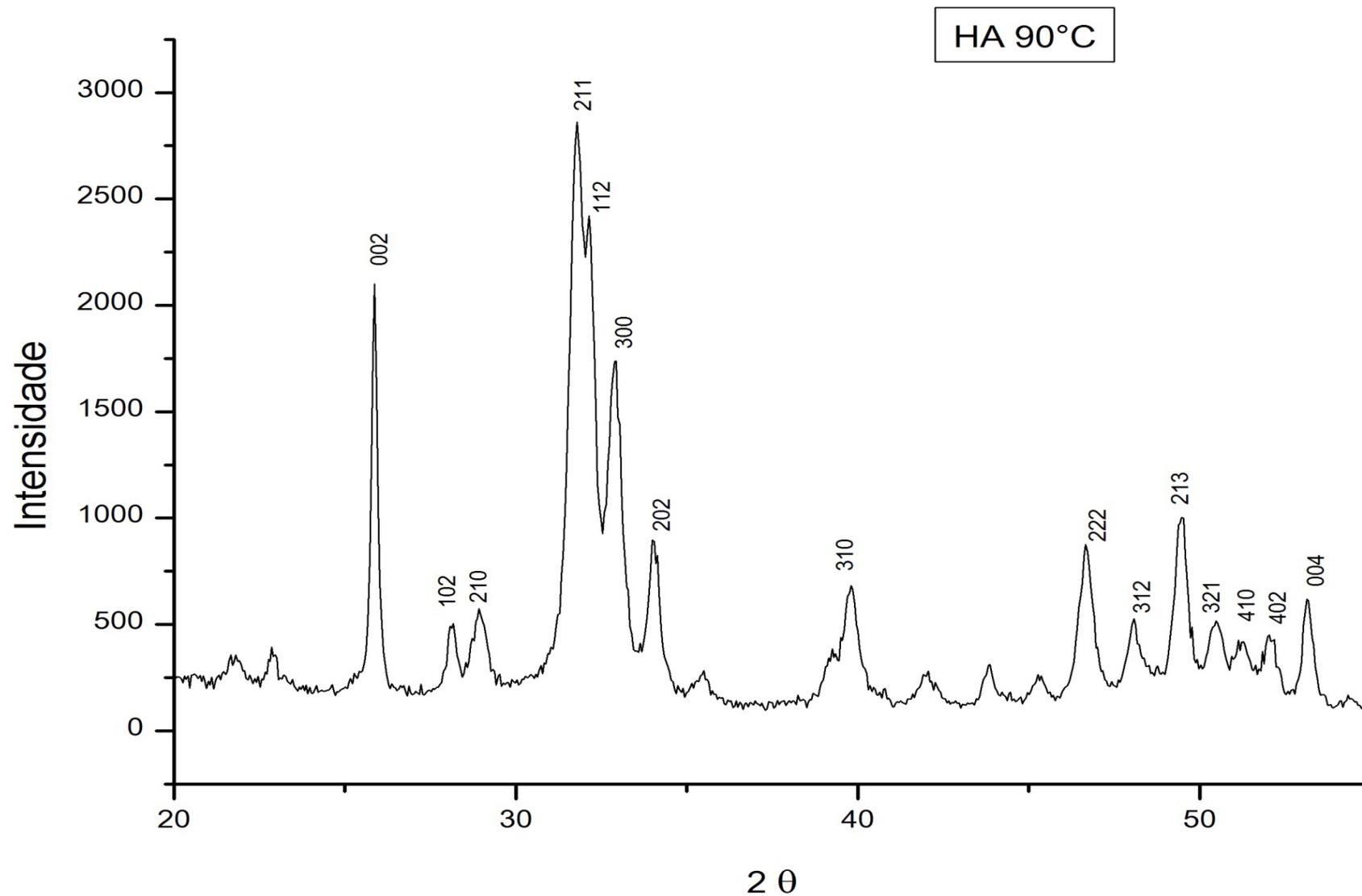
- É possível fazer substituições em ambos os sítios



# FTIR - Hidroxiapatita Nanoestruturada

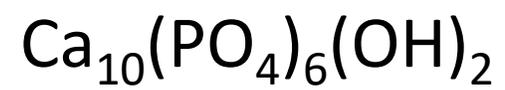
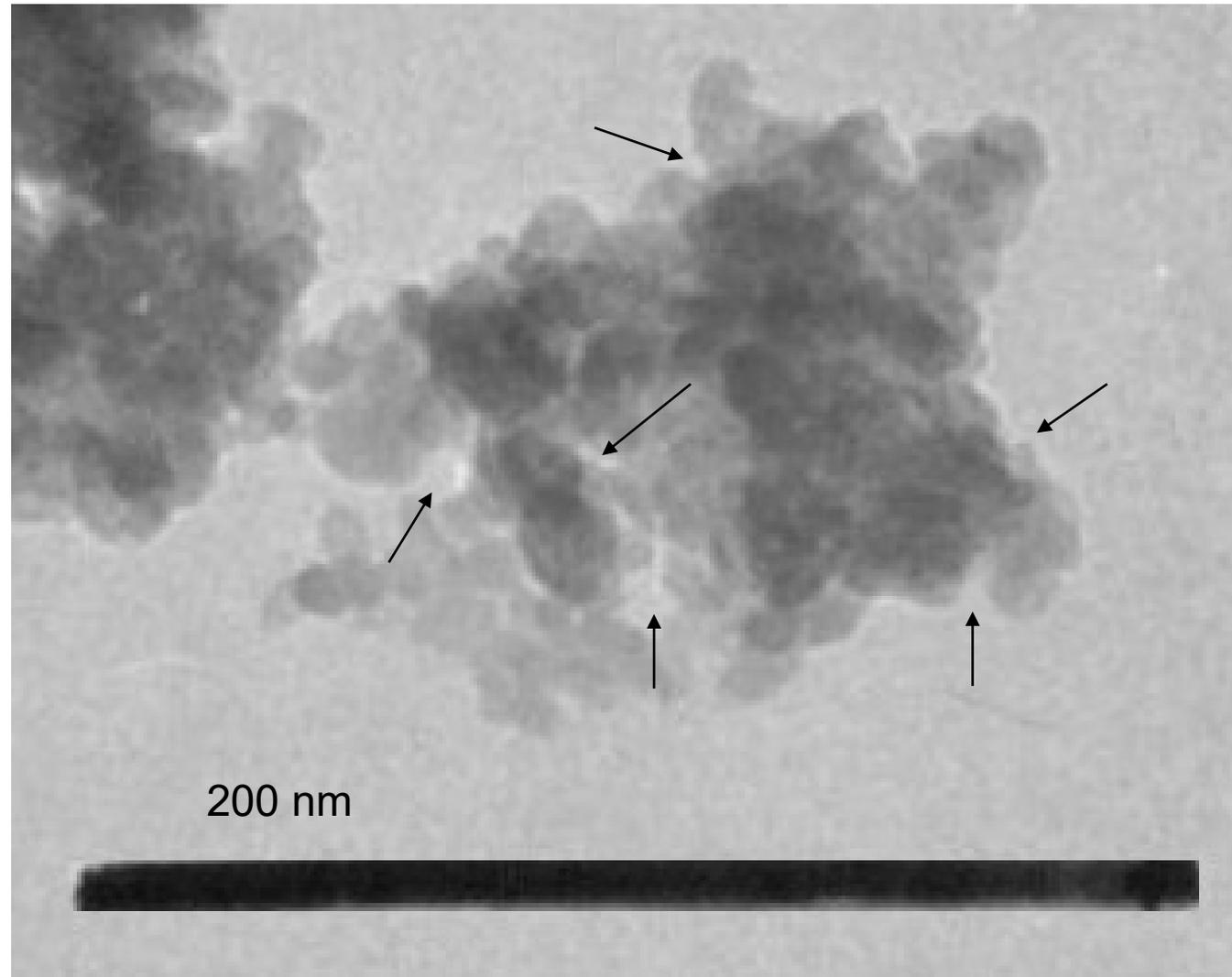


# DRX - Hidroxiapatita Nanoestruturada



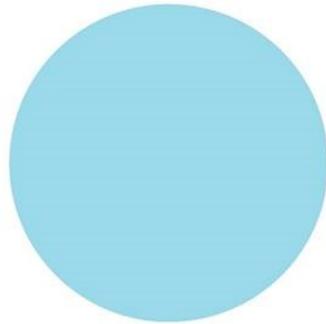


# Hidroxiapatita Nanoestruturada

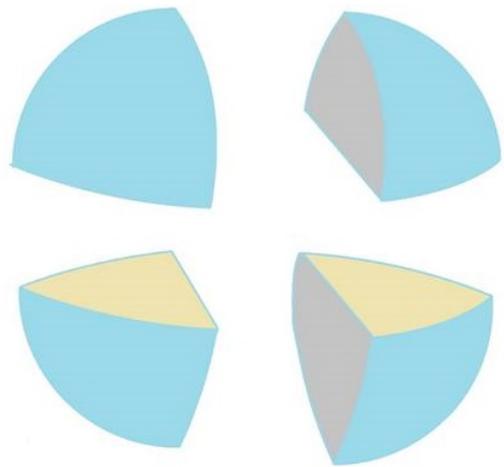
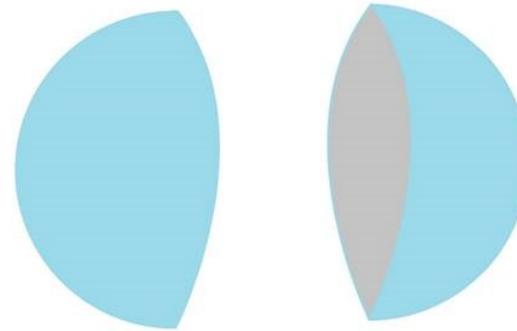


# Área Superficial

$$4\pi r^2$$

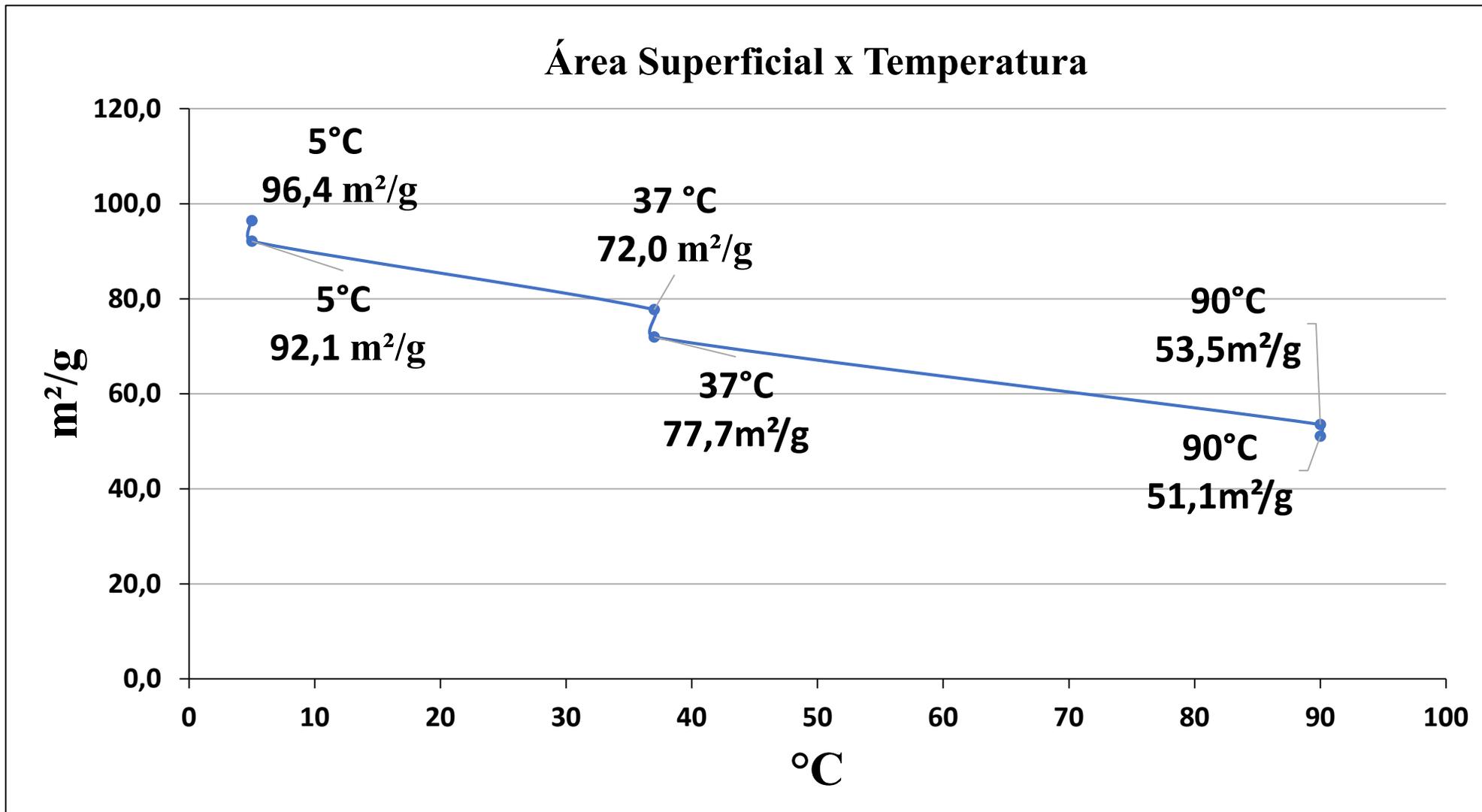


$$4\pi r^2 + 2\pi r^2$$

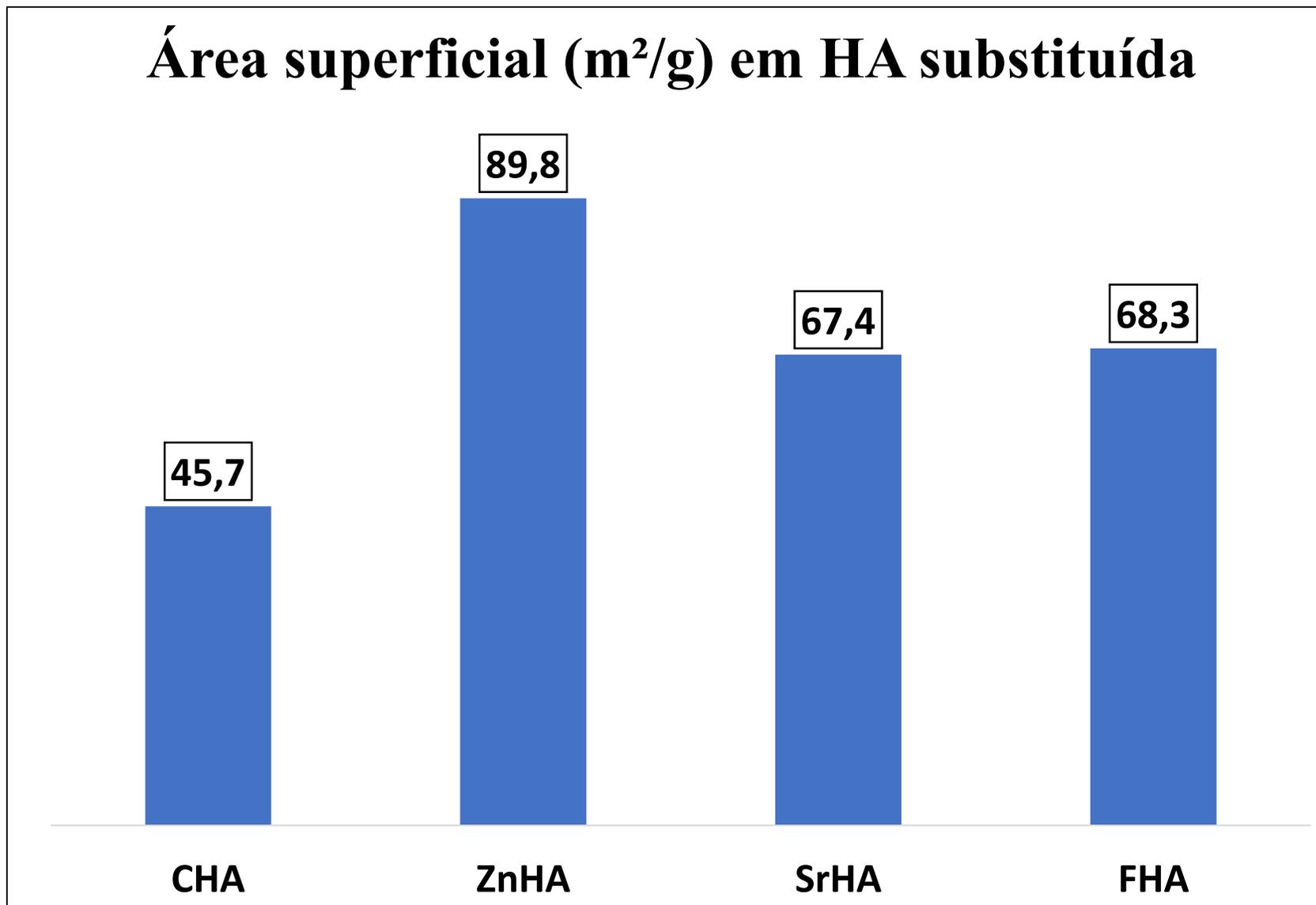


$$4\pi r^2 + 4\pi r^2$$

# BET - HA sintetizada em 5°C, 37°C e 90°C



## HA 90°C Substituída

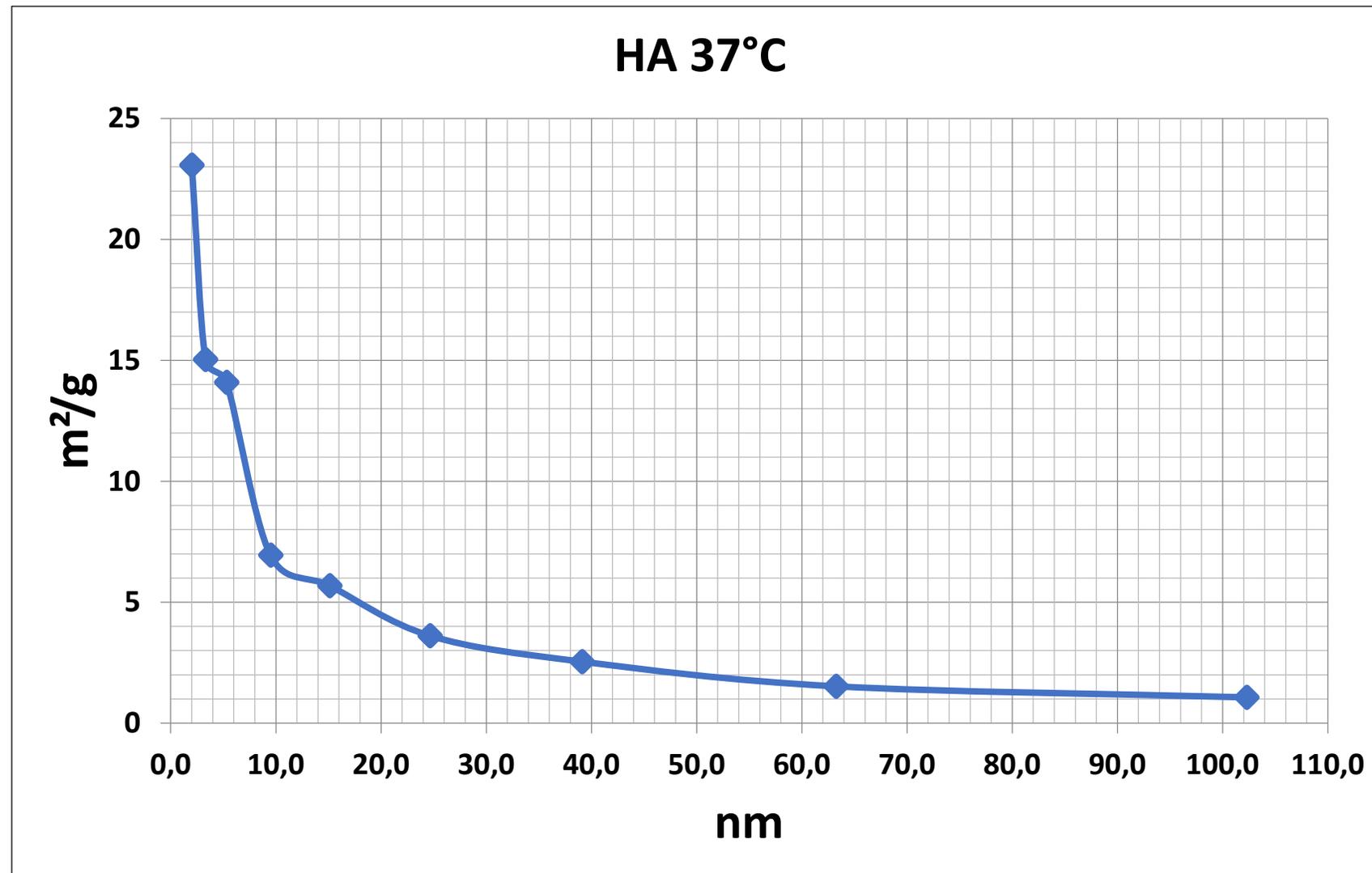




# Influência do Tamanho de Poros na Área Específica

## HA 37°C

Tamaho do Poro (nm)	Área(m <sup>2</sup> /g)
102,3	1,1
63,3	1,5
39,1	2,5
24,7	3,6
15,1	5,7
9,5	6,9
5,3	14,1
3,3	15,0
2,0	23,1





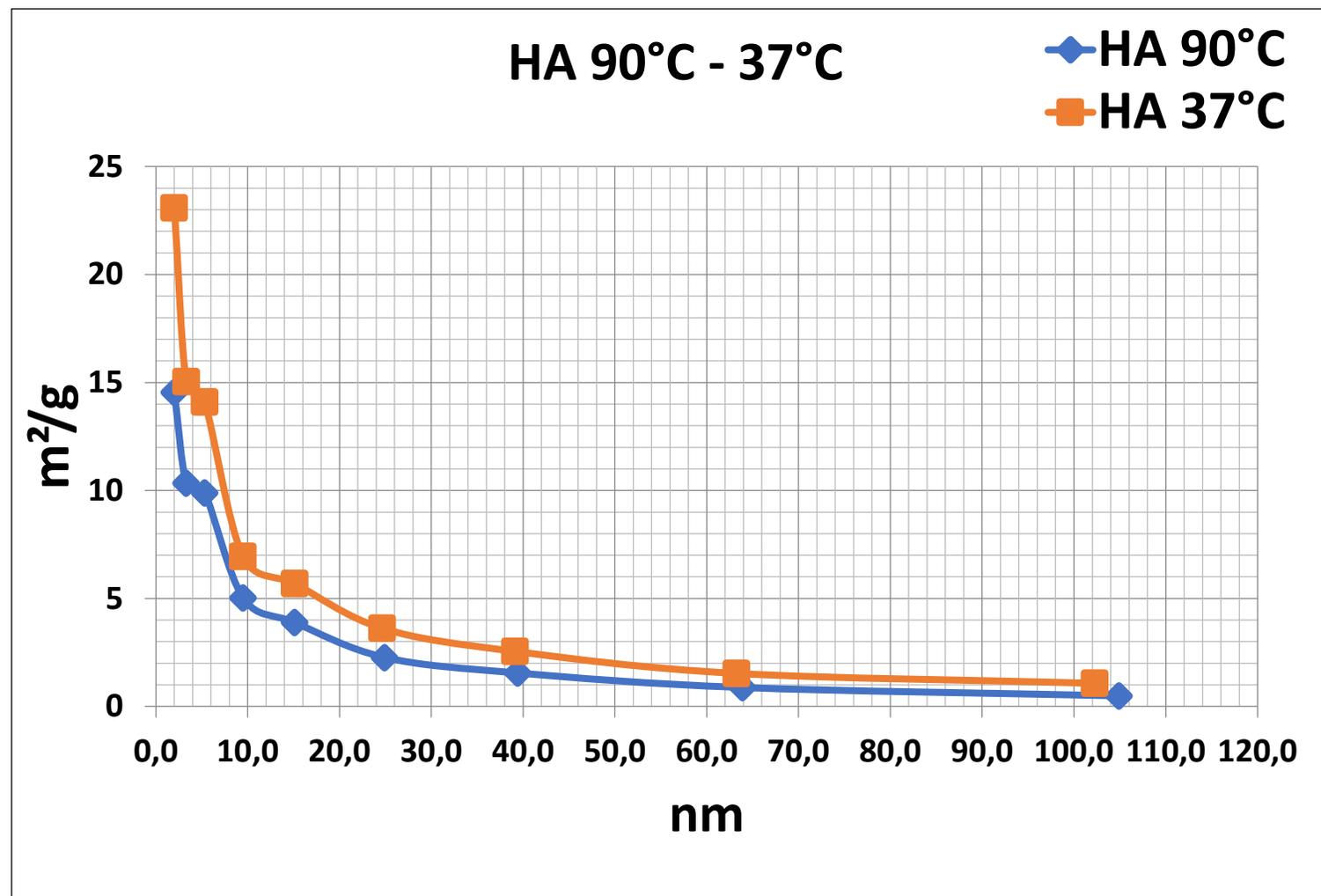
# Influência do Tamanho de Poros na Área Específica

## HA 37°C

## HA 90°C

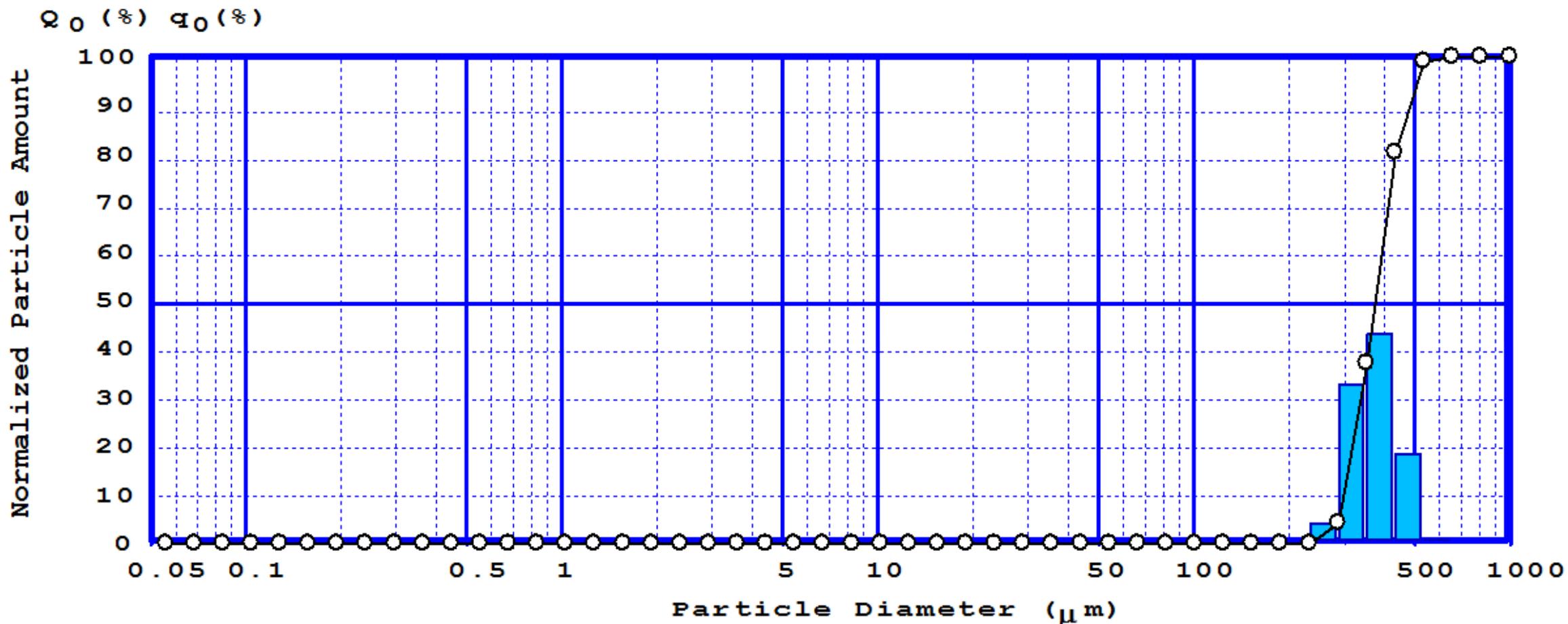
Tamaho do Poro (nm)	Área(m <sup>2</sup> /g)
102,3	1,1
63,3	1,5
39,1	2,5
24,7	3,6
15,1	5,7
9,5	6,9
5,3	14,1
3,3	15,0
2,0	23,1

Tamaho do Poro (nm)	Área(m <sup>2</sup> /g)
104,9	0,5
63,9	0,9
39,4	1,5
24,9	2,3
15,1	3,9
9,5	5,0
5,3	9,9
3,3	10,3
2,0	14,5

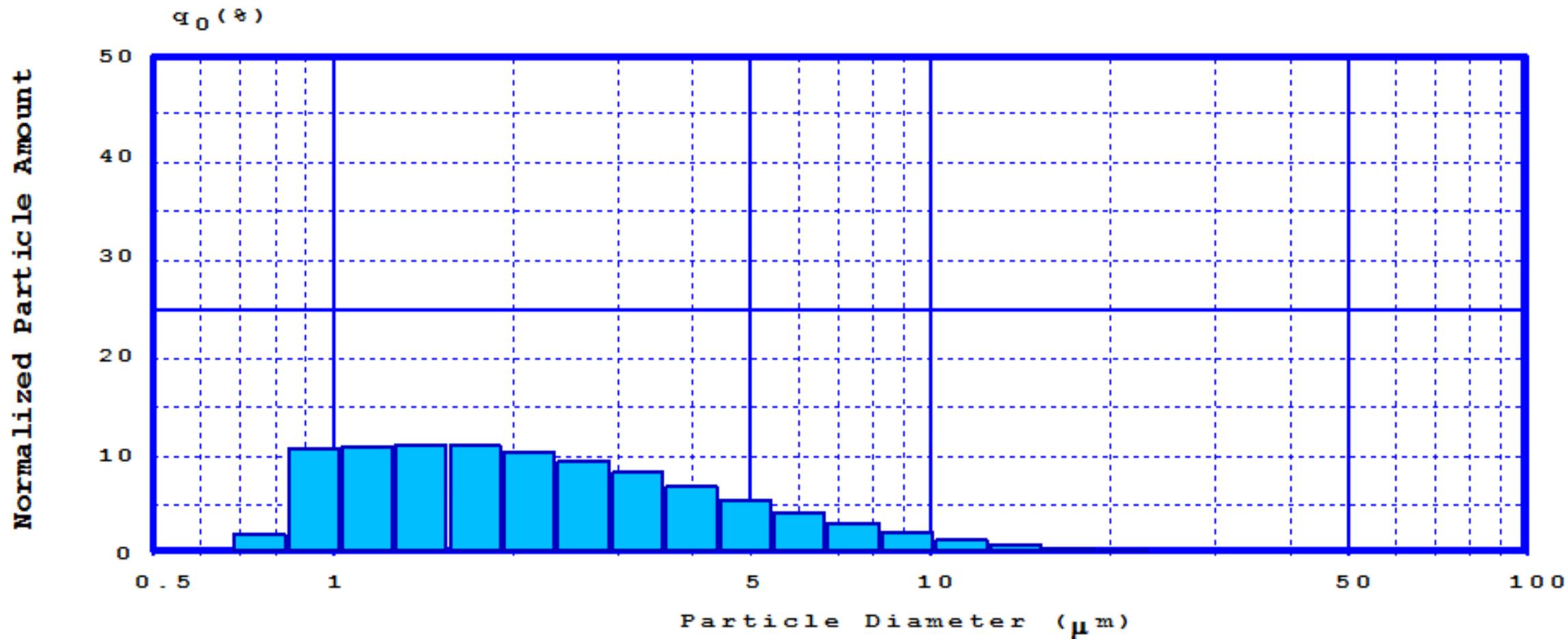




# HA 90°C: SALD -Tamanho de Aglomerados



# HA 90°C: SALD -Tamanho de Aglomerados





# Conclusões e Próximas Etapas