

UNIVERSIDADE DE SÃO PAULO
FACULDADE DE ODONTOLOGIA
DEPTO. DE BIOMATERIAIS E BIOLOGIA ORAL

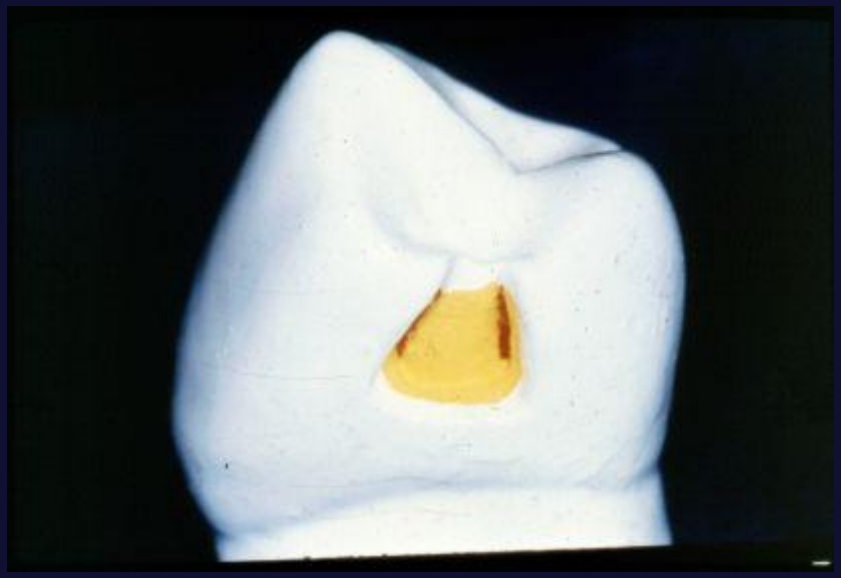
Princípios de adesão

Roteiro de aula

1. Introdução
2. Conceitos básicos
3. Mecanismos de adesão
4. Fatores que interferem na adesão
5. Falhas na adesão

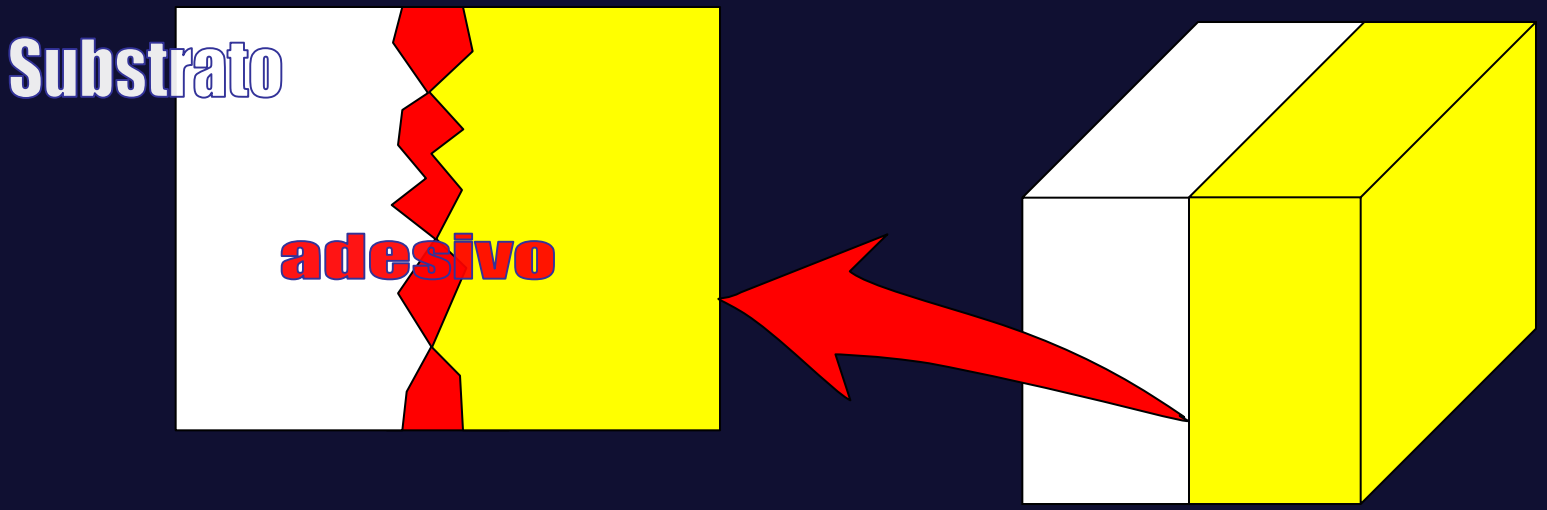
Definição

Qualquer artifício utilizado para manter partes em contato



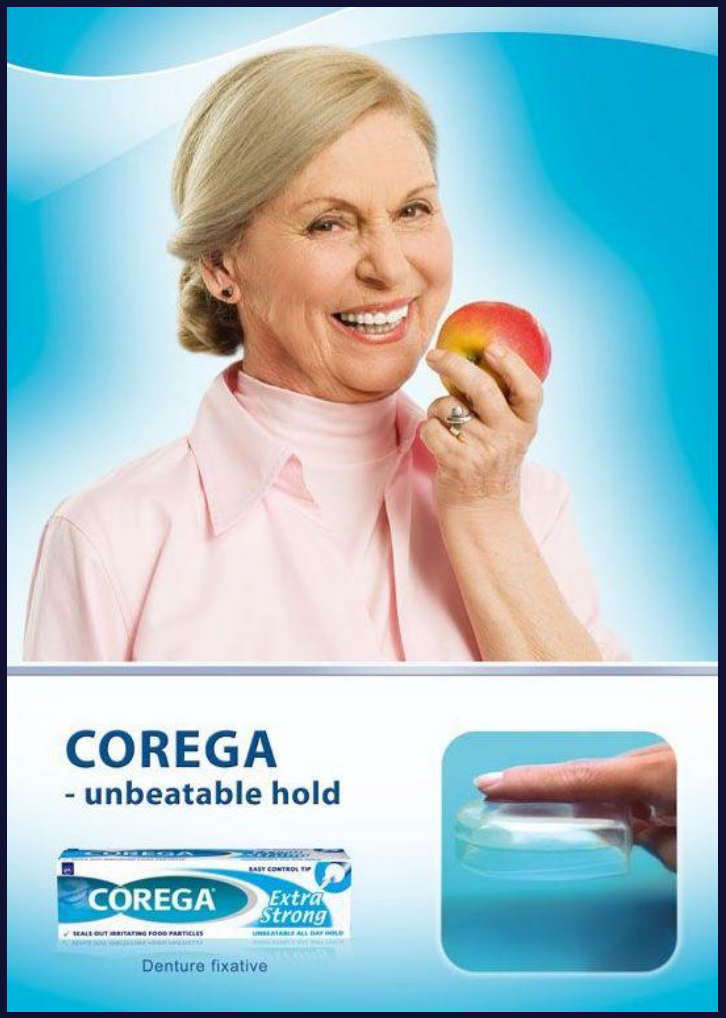


Substrato aderente e adesivo

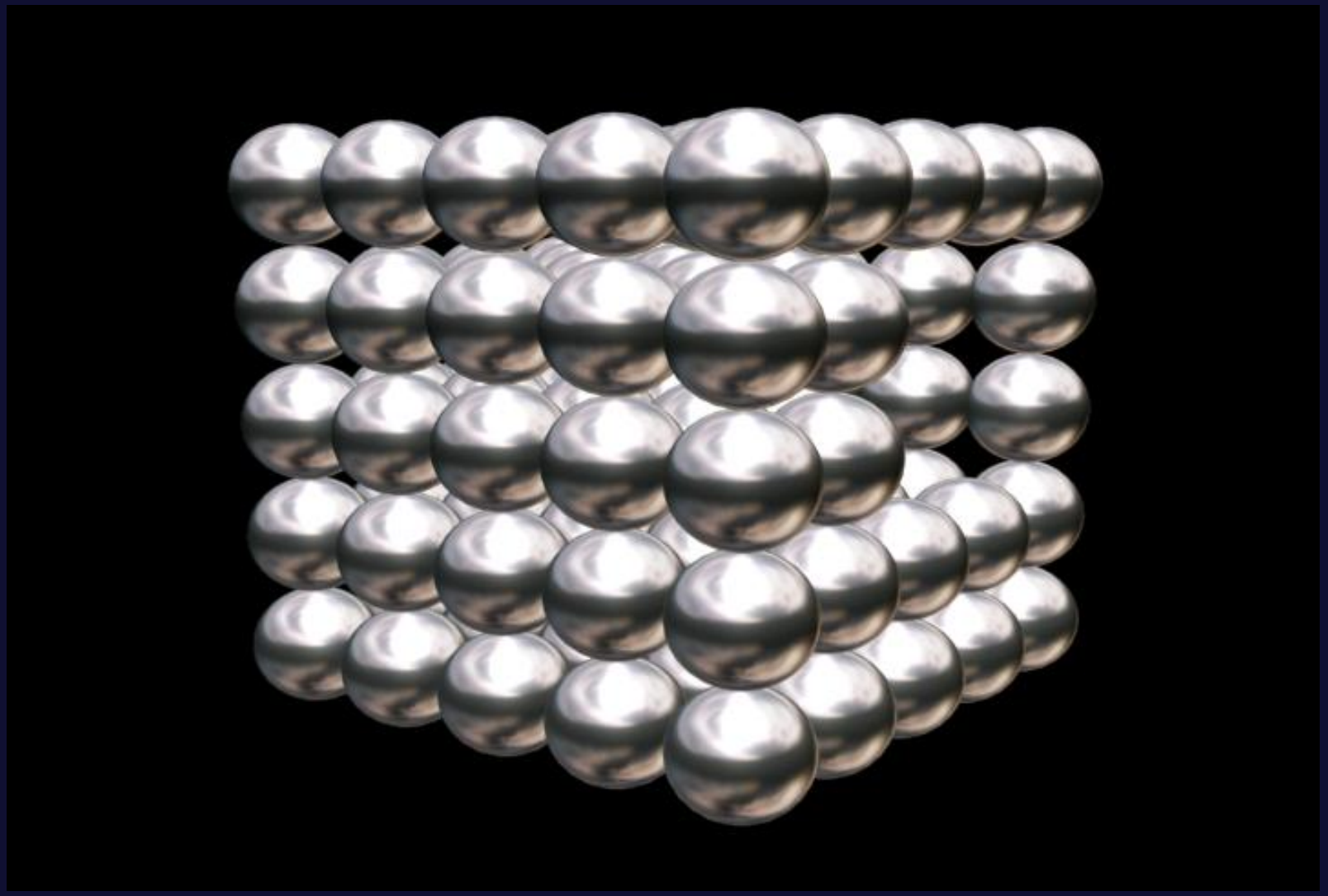


Distância mínima = 0,0007 µm

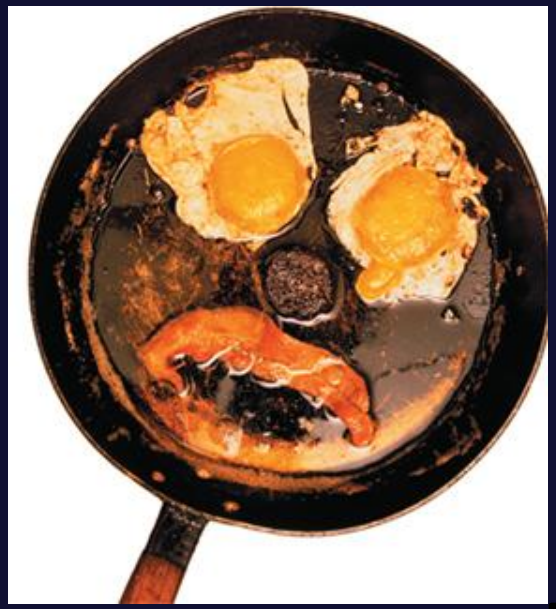


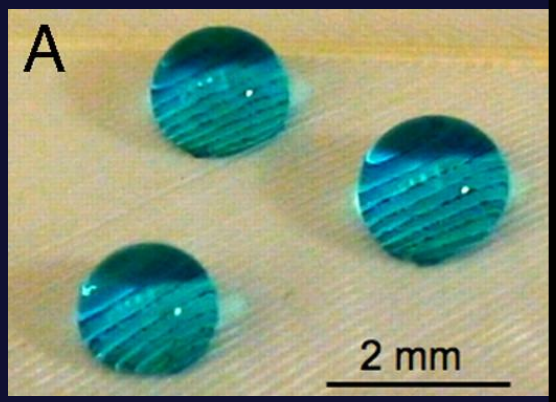

COREGA
- unbeatable hold
COREGA
Extra Strong
Denture fixative

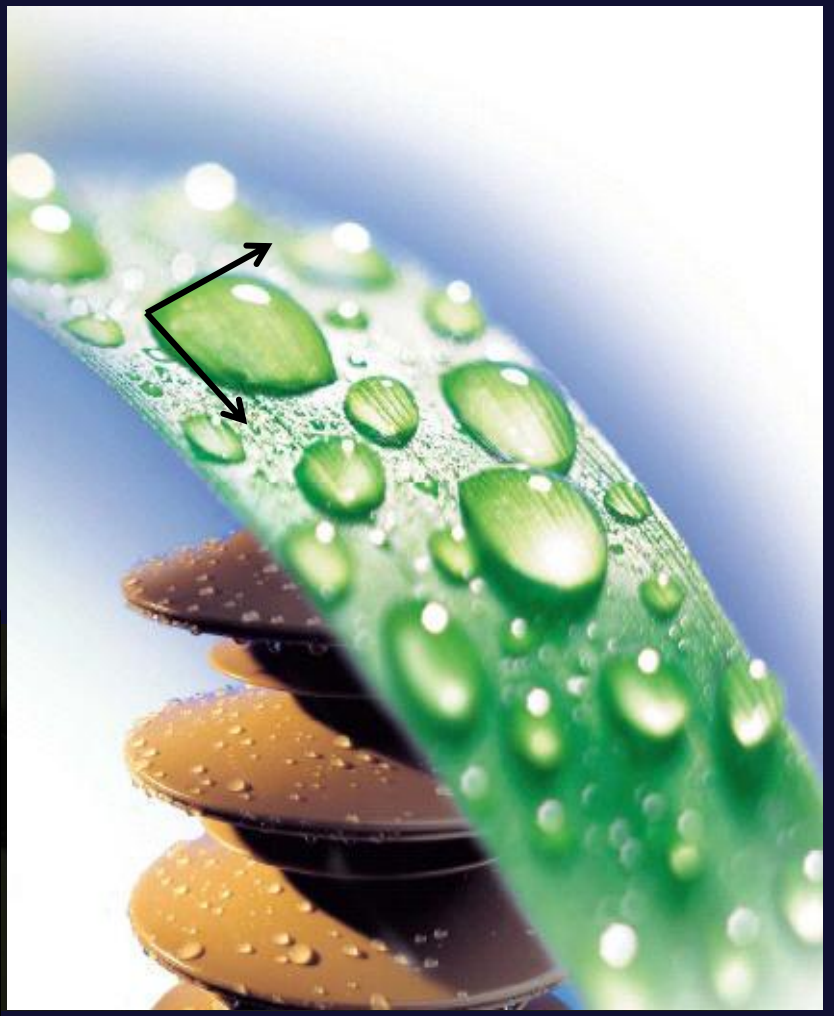
Energia de superfície



Ângulo de contato



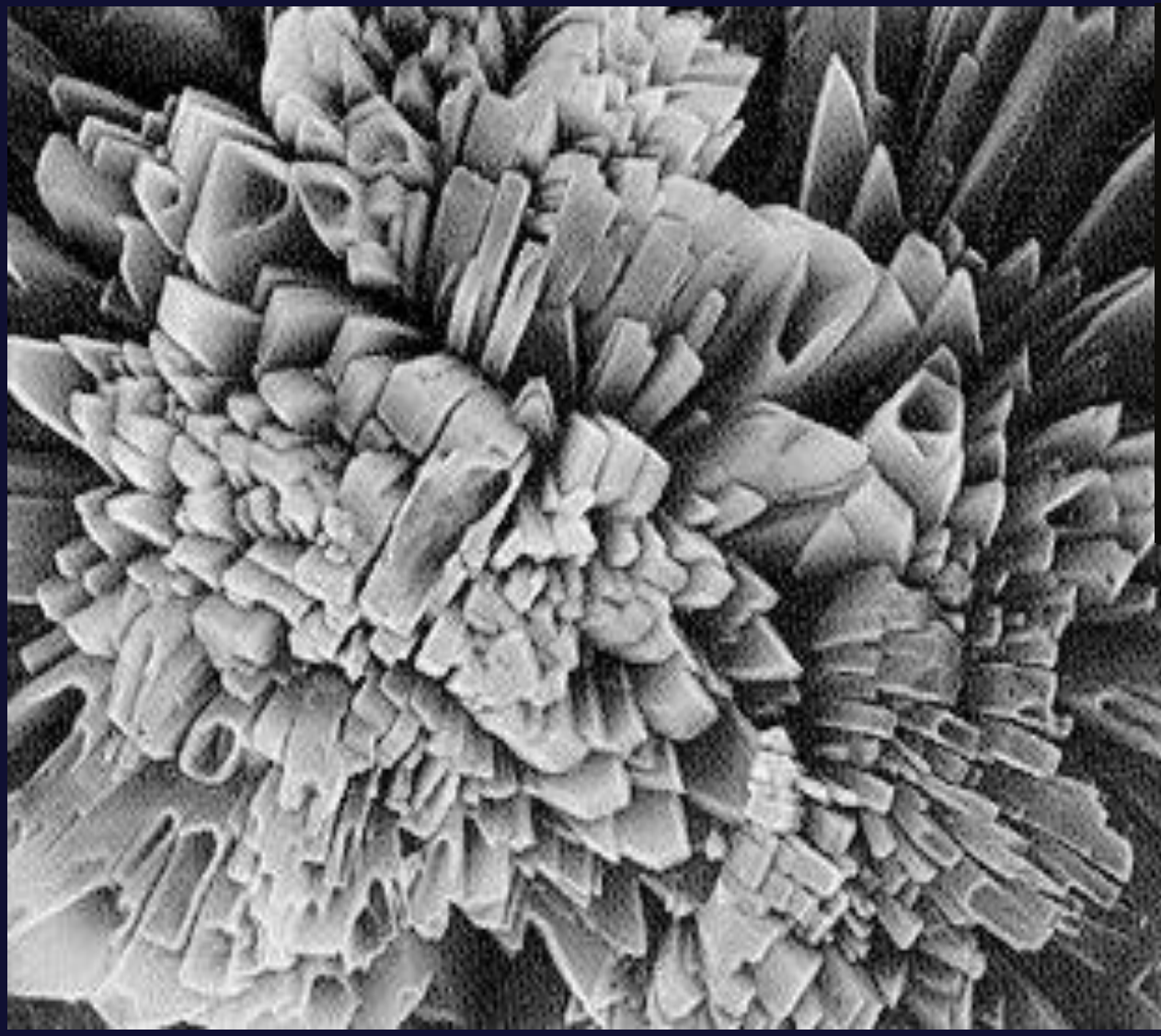




Tuteja, Choi, Mabry, McKinley, Cohen. *PNAS* 2008

Condicionamento ácido do esmalte

- Objetivos:
  - Remover película/smear;
  - Dissolver parcialmente os cristalitos para criar padrão retentivo;

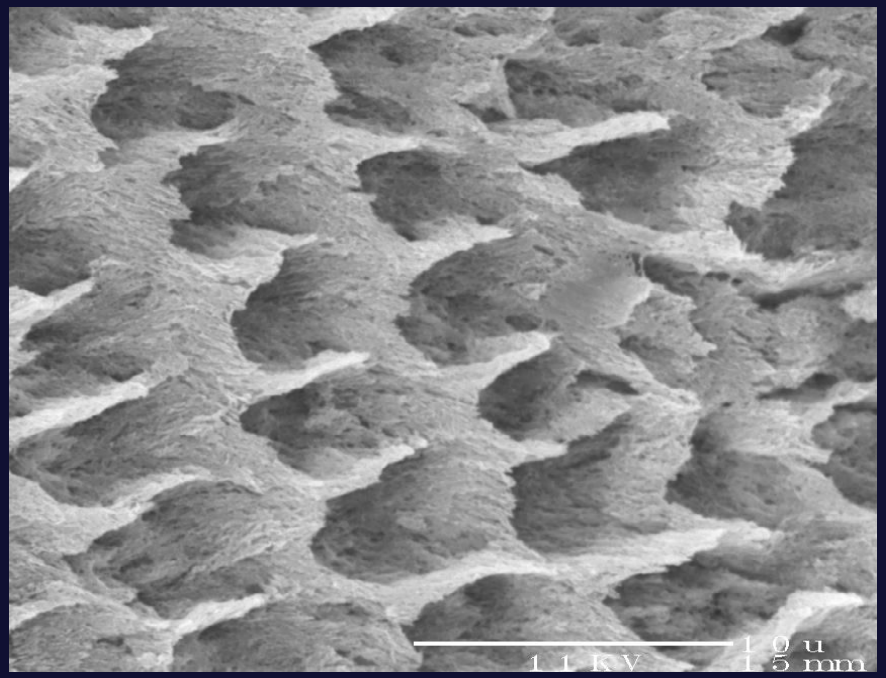




Ác. Fosfórico

37%

Princípio micromecânico



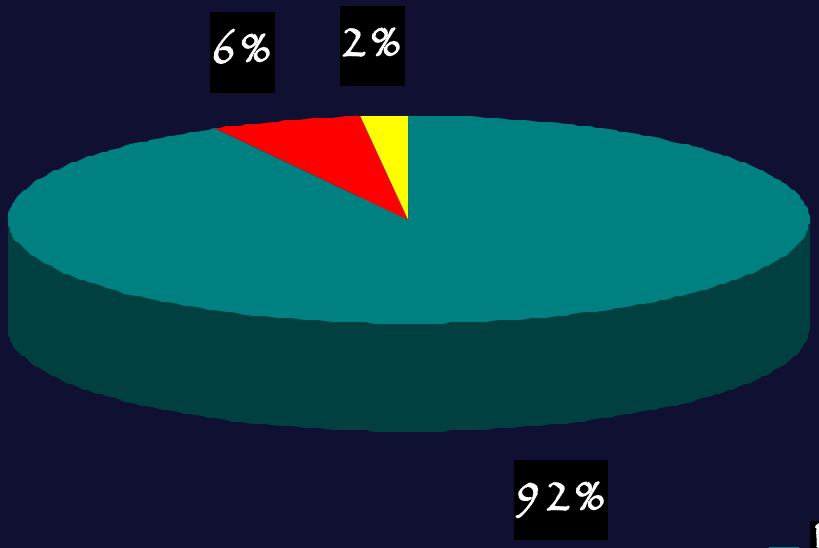
Diâmetro= 5µm
Profundidade= 20µm



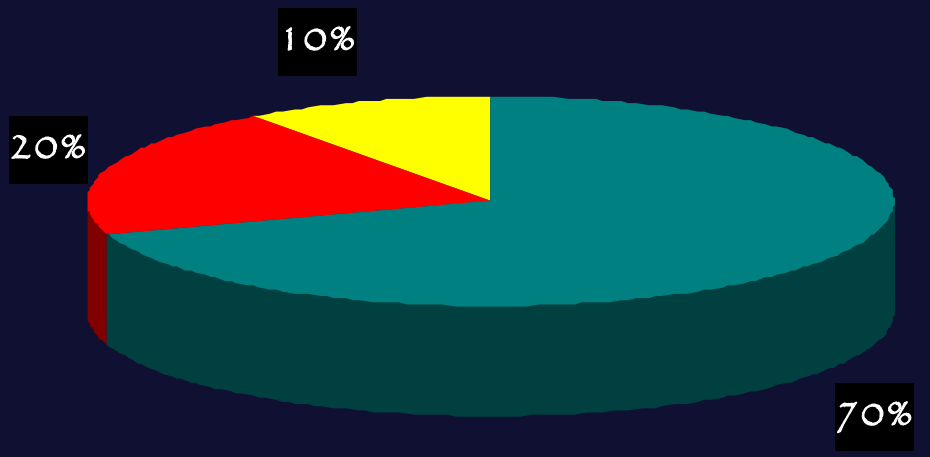
Energia de superfície aumenta de 25 dinas/cm para 70 dinas/cm

Substratos

Esmalte



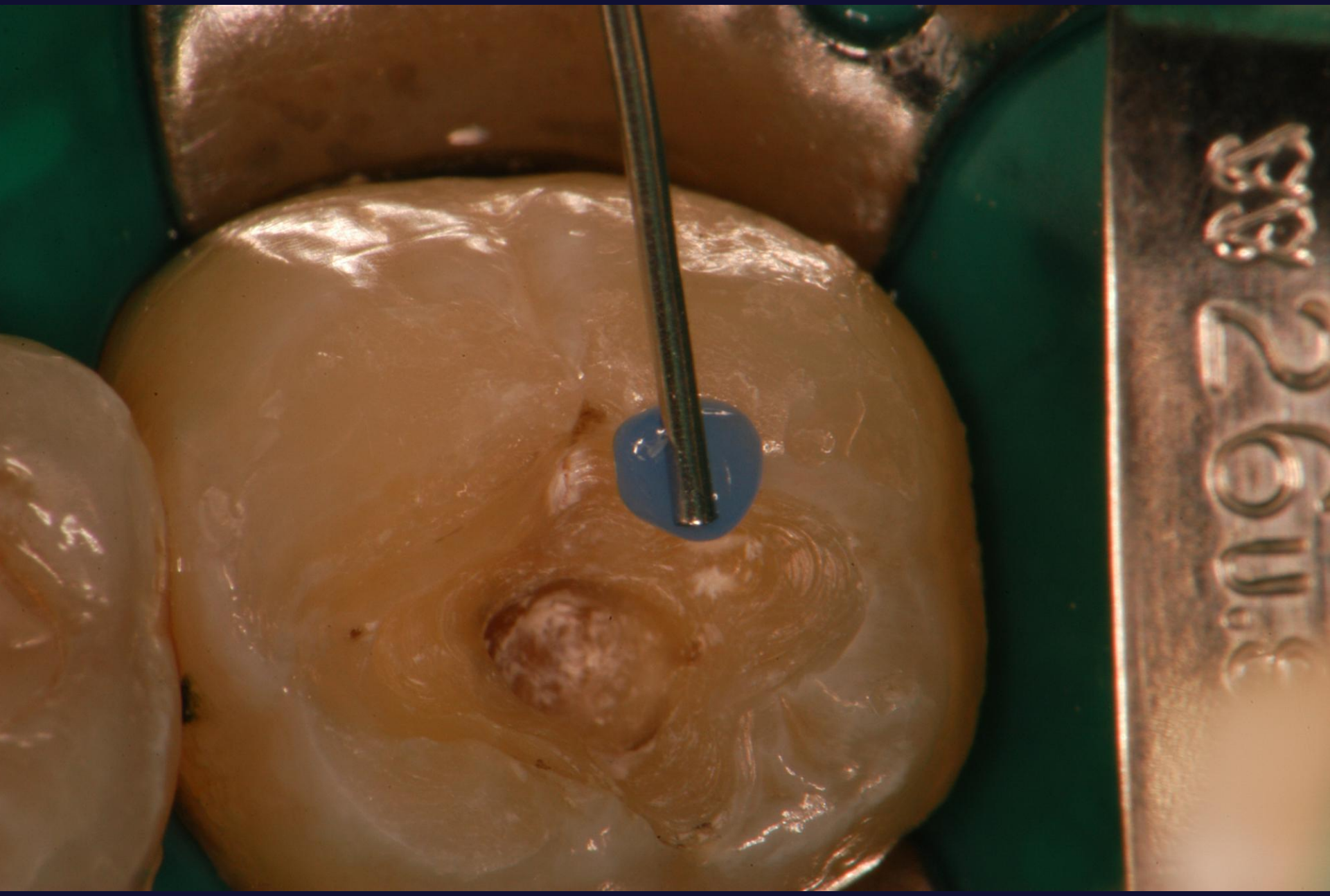
Dentina

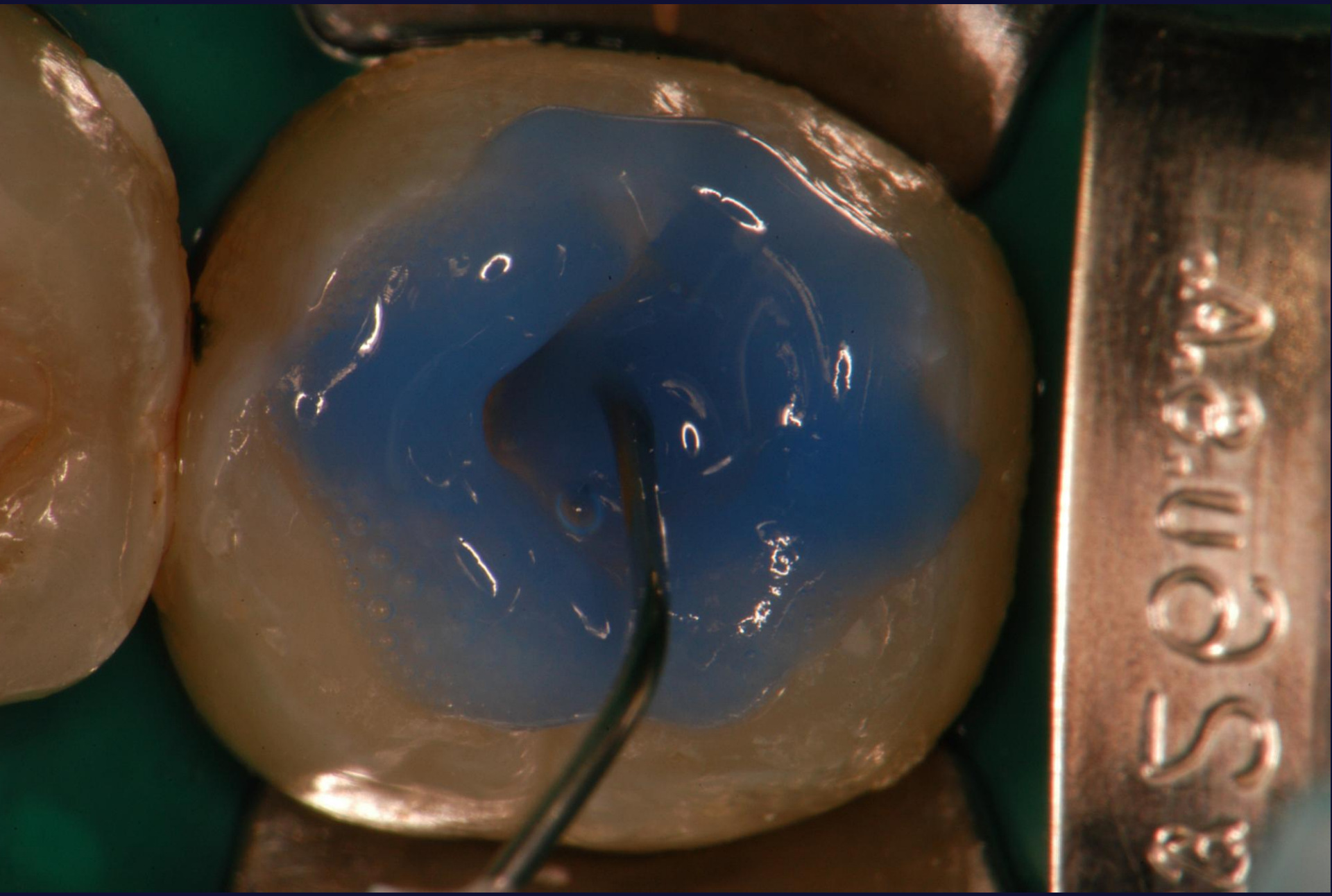


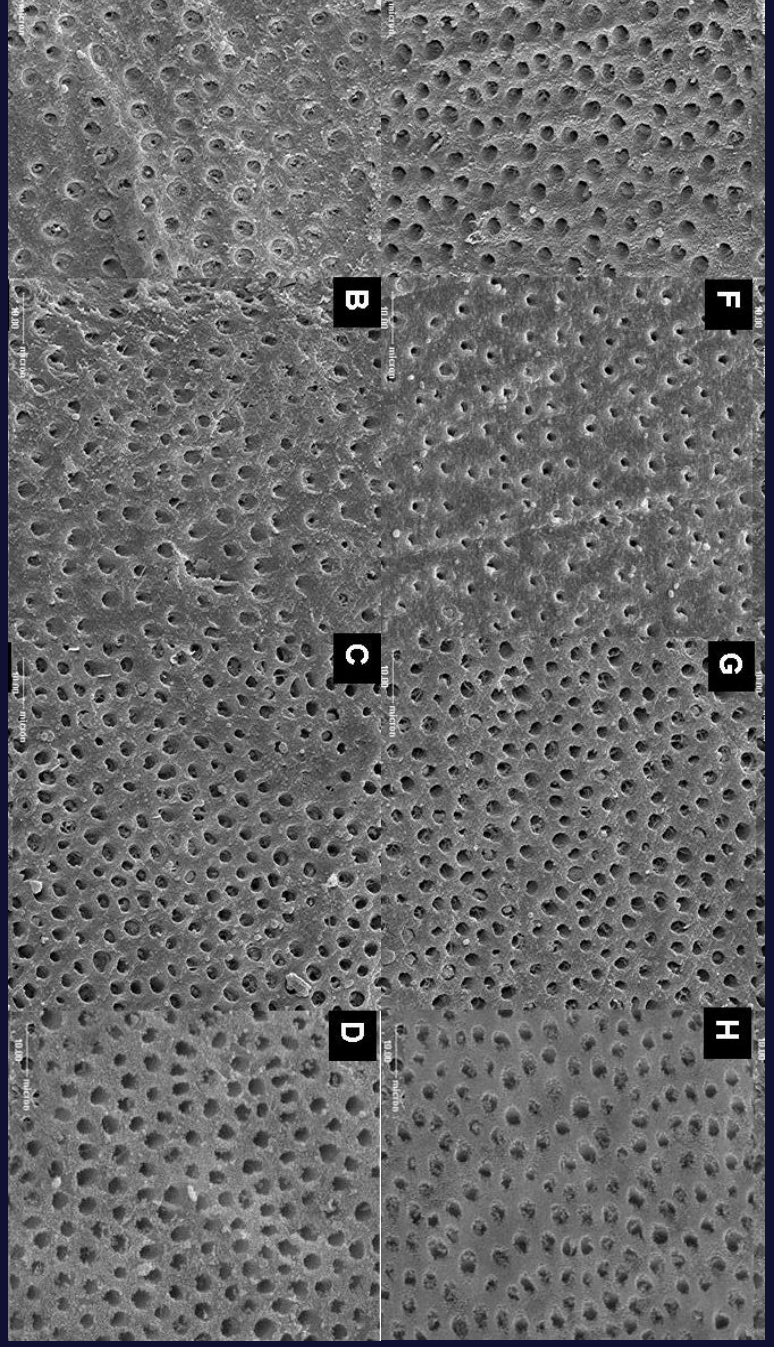
Mineral

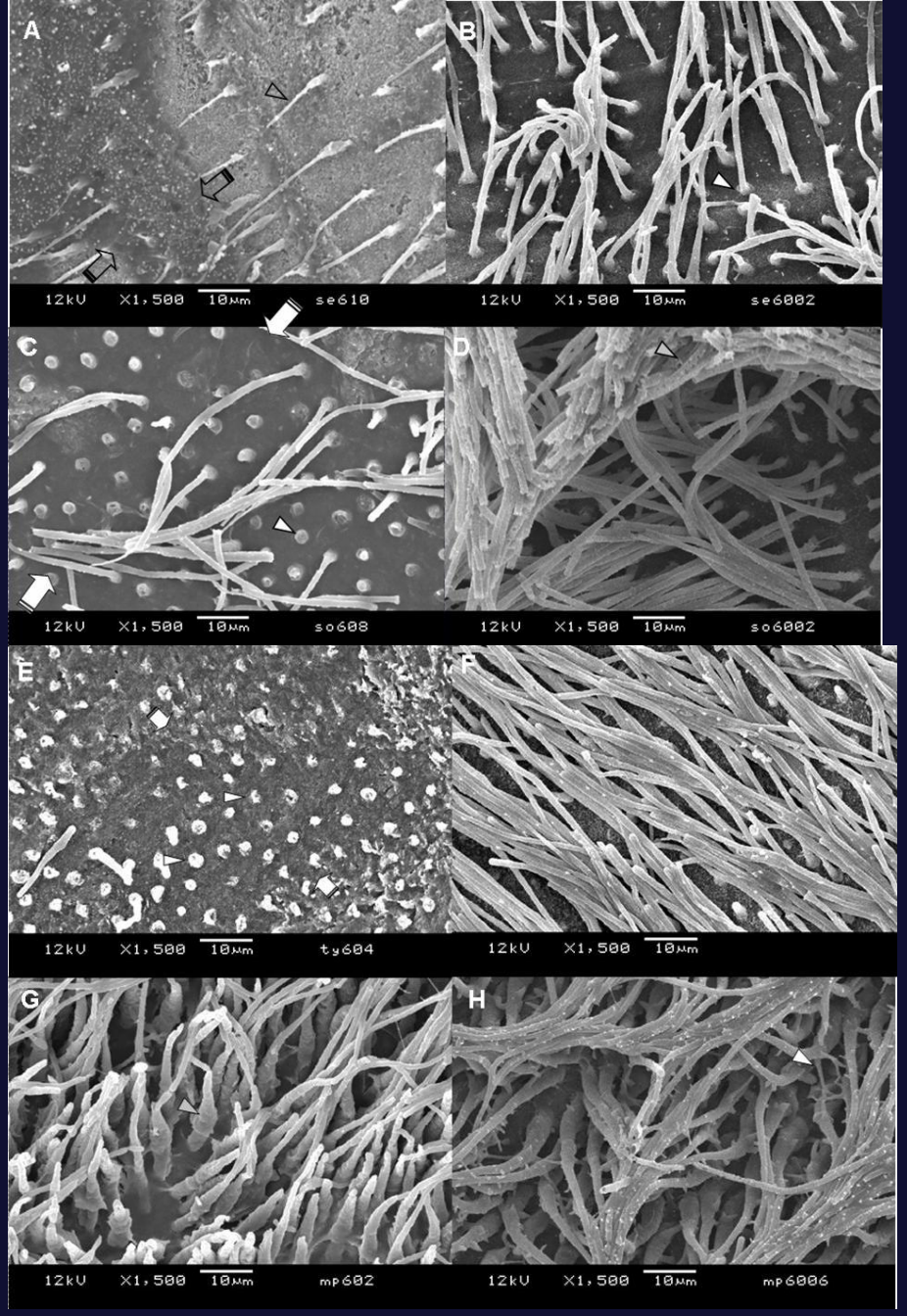
Orgânico

Água

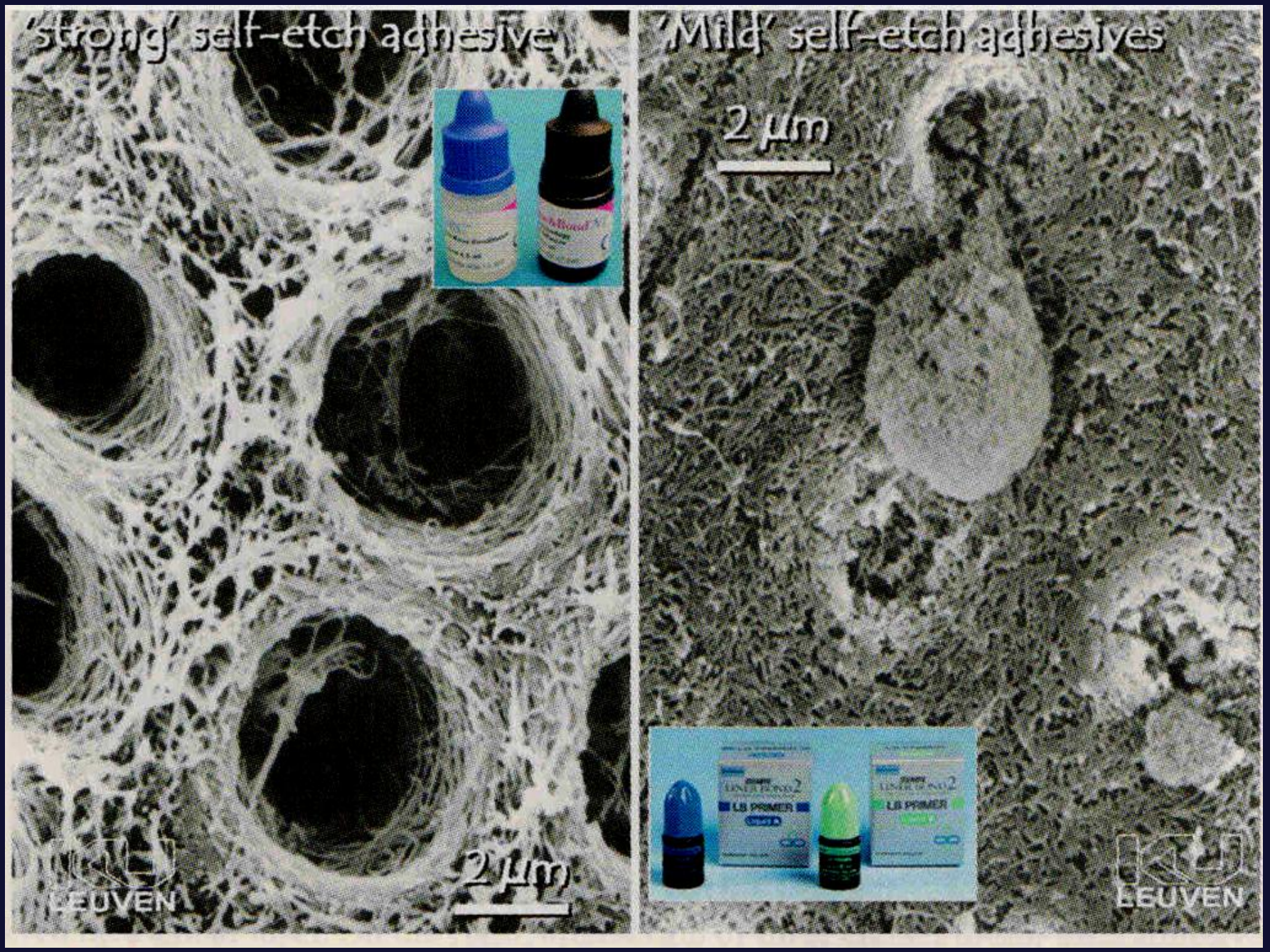




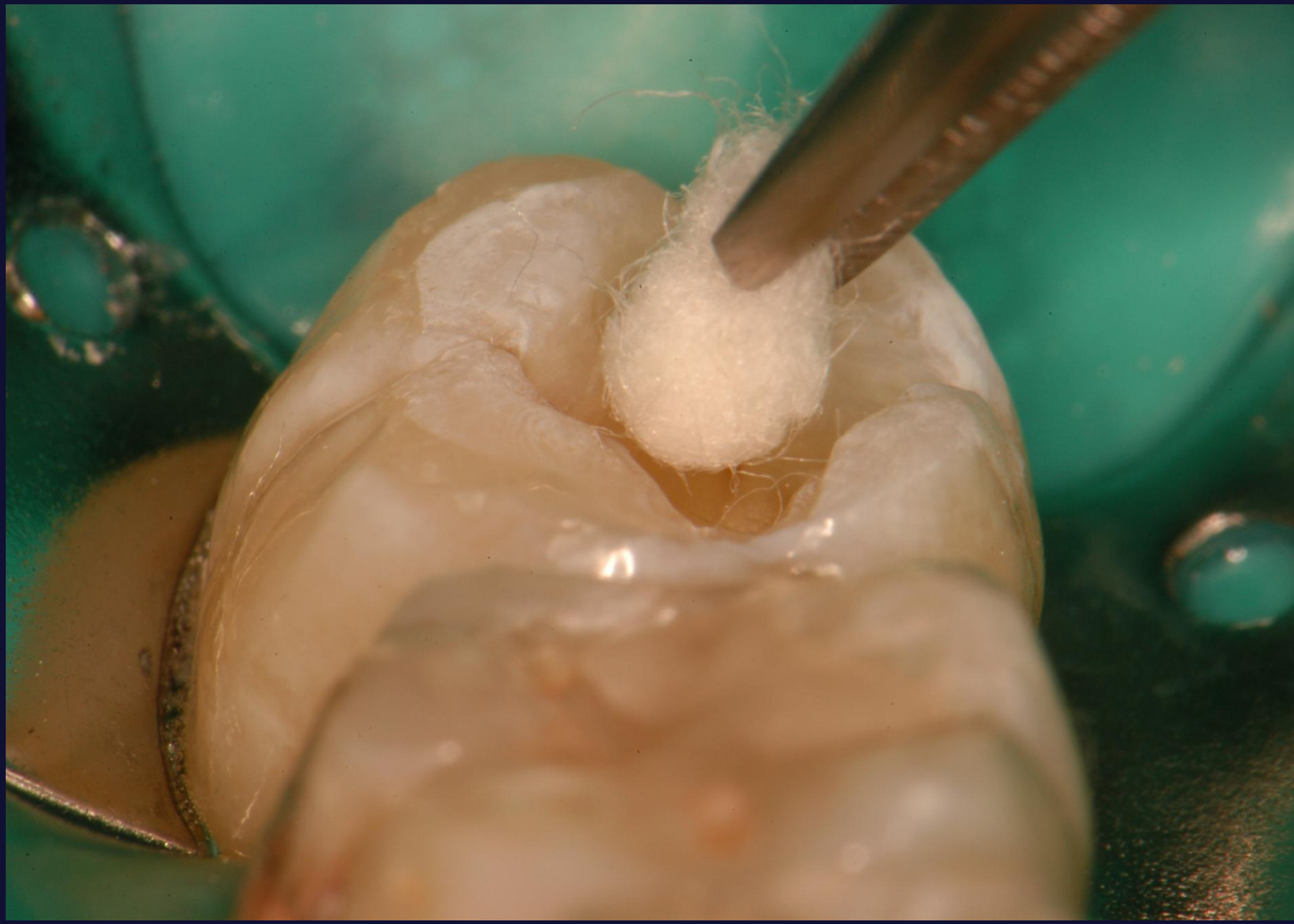




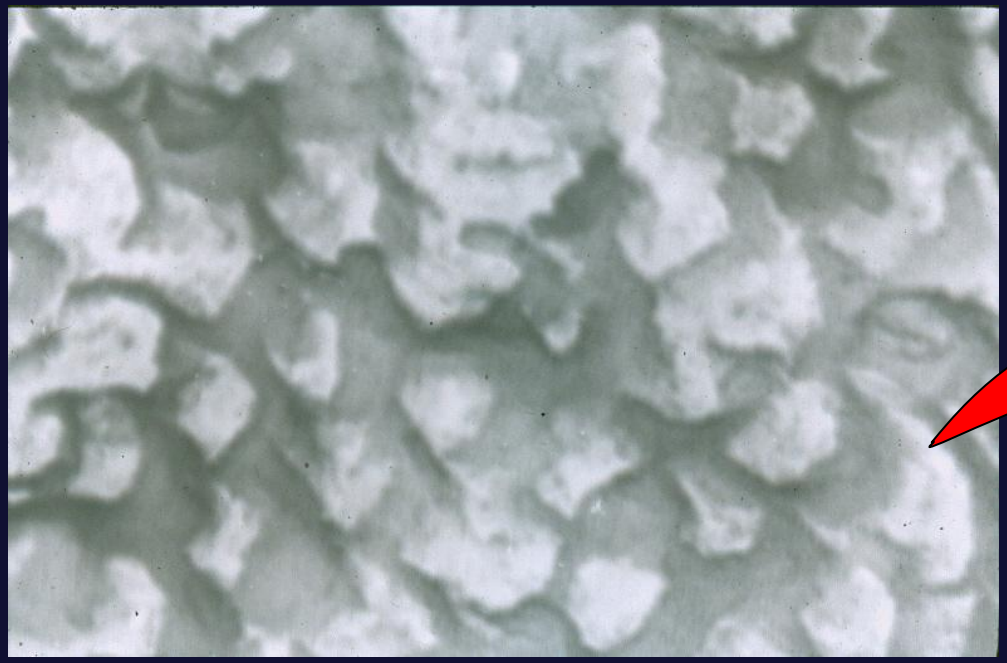
Kenshima *et al. J Dent,* 2006

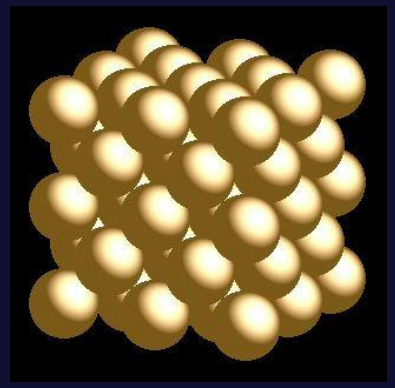


Eliades G, Watts DC, Eliades,T. Dental Hard Tissues and Bonding. 1. ed, Spriger-Verlag, 2005



Padrão de condicionamento





Rodrigues Filho *(unpublished data)*

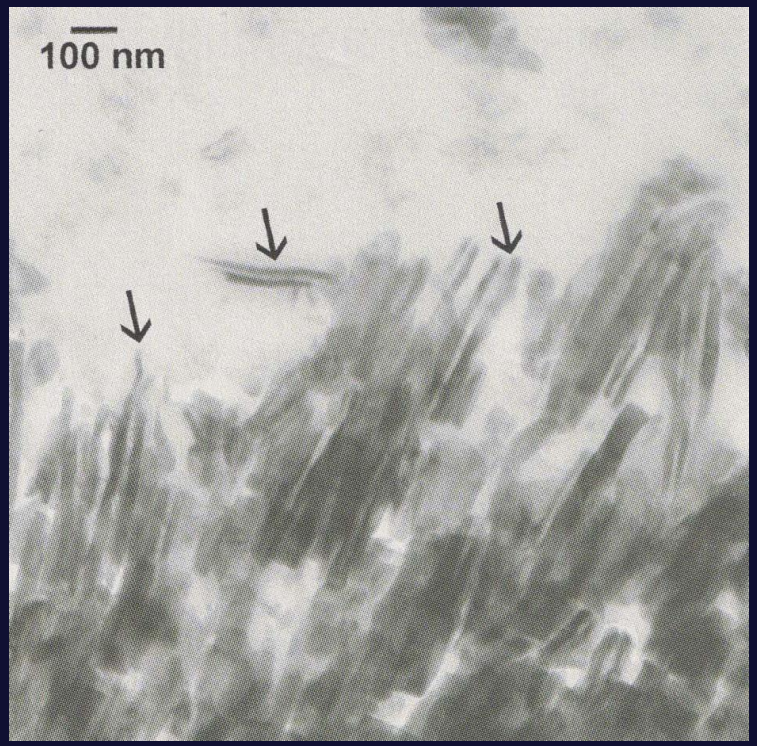
- Remover película/smear
- Dissolver parcialmente os cristalitos para criar padrão retentivo

Silverstone, Saxton, Dogon, Fejerskov. *Caries Res,* 1975

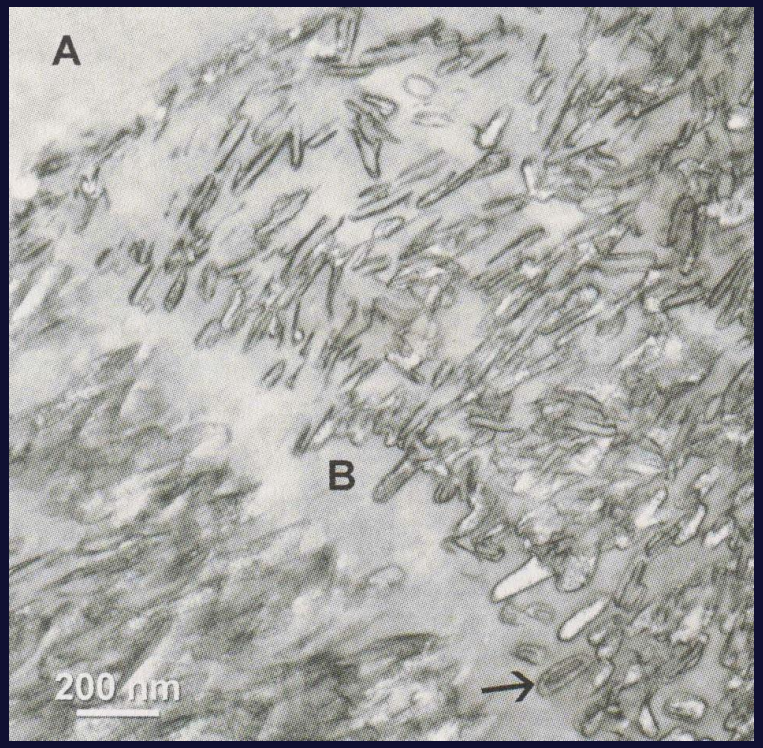




Enamel hybridization

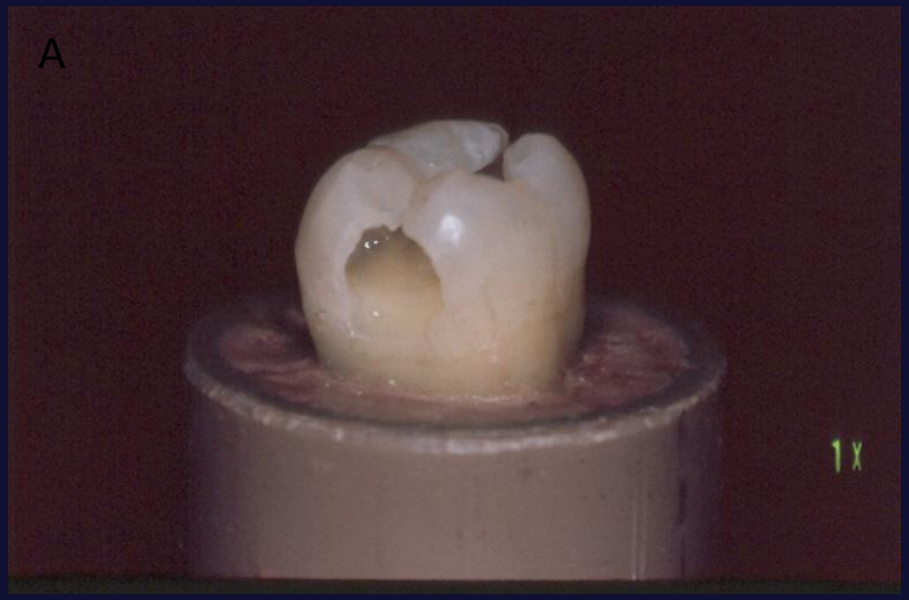


Intra-crystallite resin encapsulation of central hole regions of partially dissolved apatites (TEM image)



Adhesive (A) infiltration into interprismatic boundaries (B) within enamel hybrid layer (TEM image).

Tay & Pashley In: *Dental Hard Tissues*, 2005

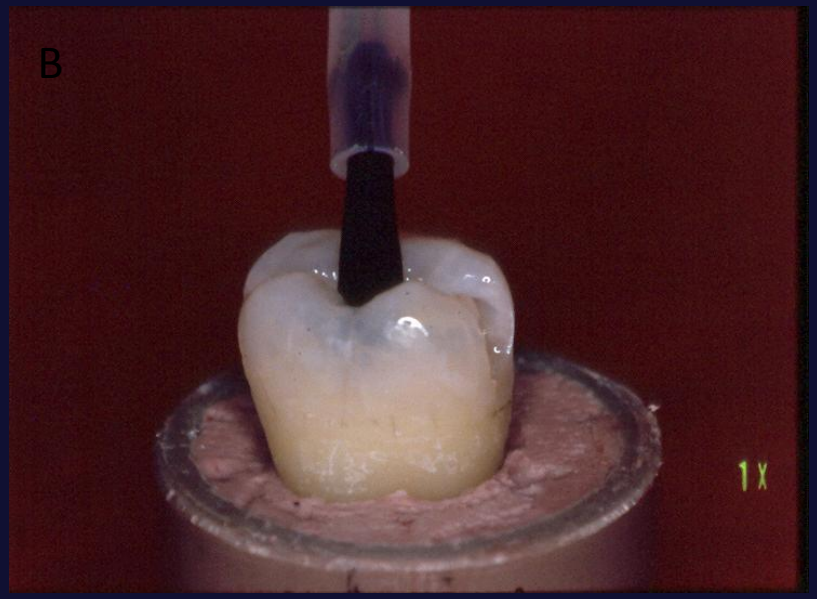


As metodologias de pesquisa deveriam se basear em situações clínicas a fim de validar os resultados observados in vitro.

Van Landuyt, De Munck, Coutinho, Peumans, Lambrechts, Van Meerbeek. 2005

O aumento da extensão do preparo cavitário com envolvimento das cristas marginais (MOD) propicia condição de menor resistência da estrutura dentária para restaurações a amálgama.

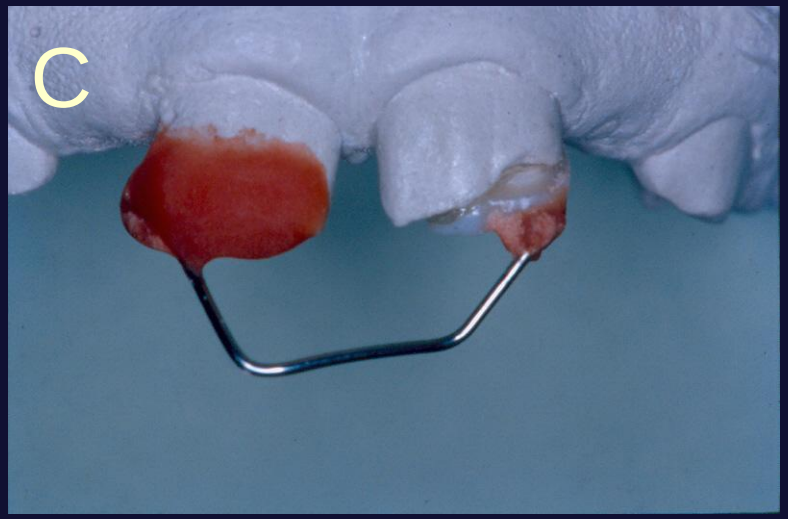
Mondelli, Mondelli, Barbosa, Carvalho. *Am J Dent* 1998



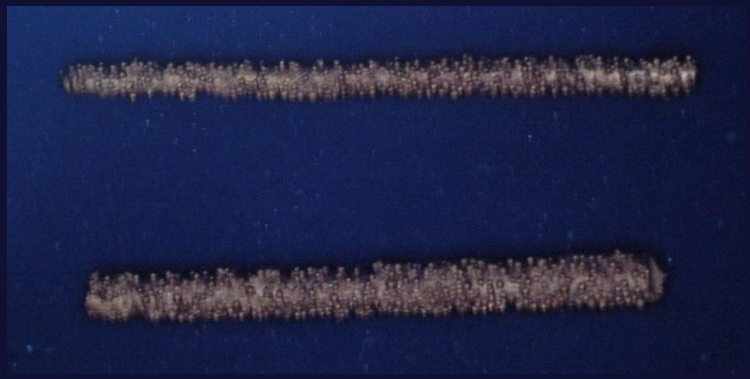
Rodrigues Filho, Muench. *Rev Odont USP* 1995


A

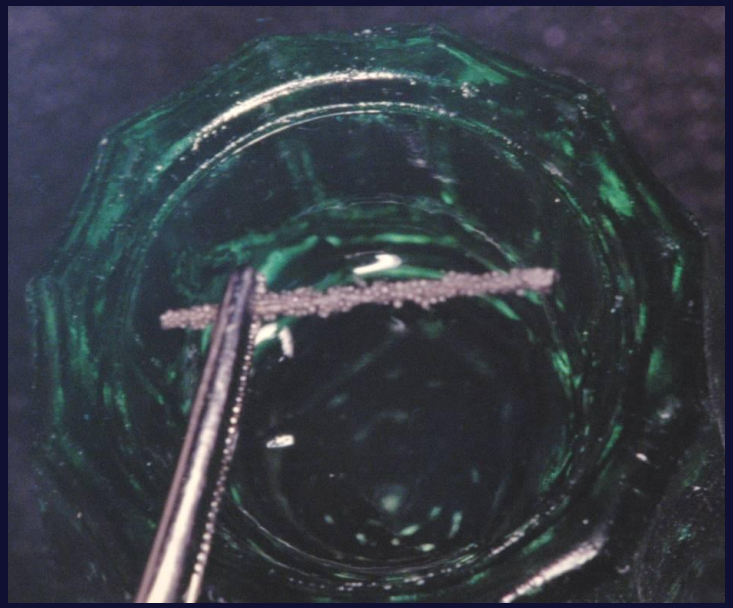

B


C

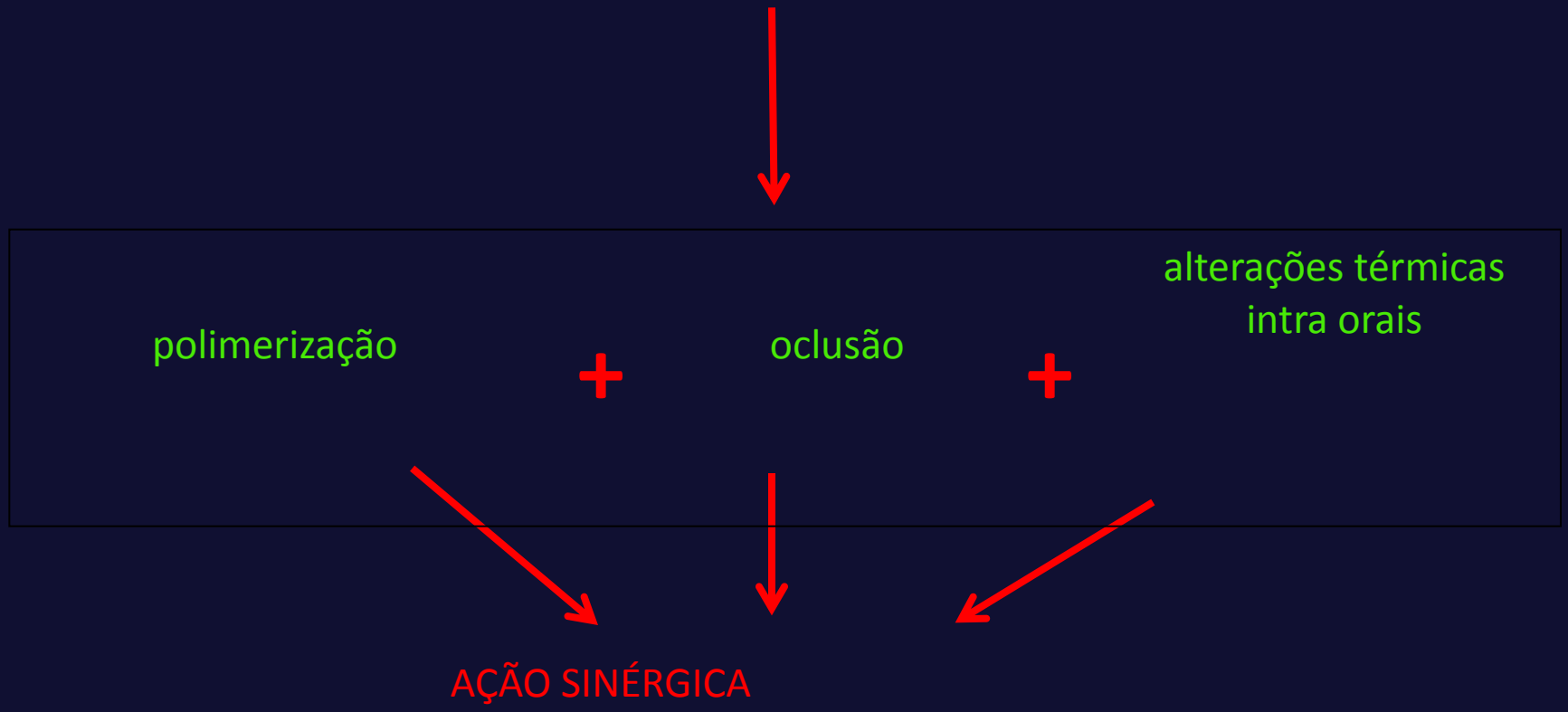

97 3





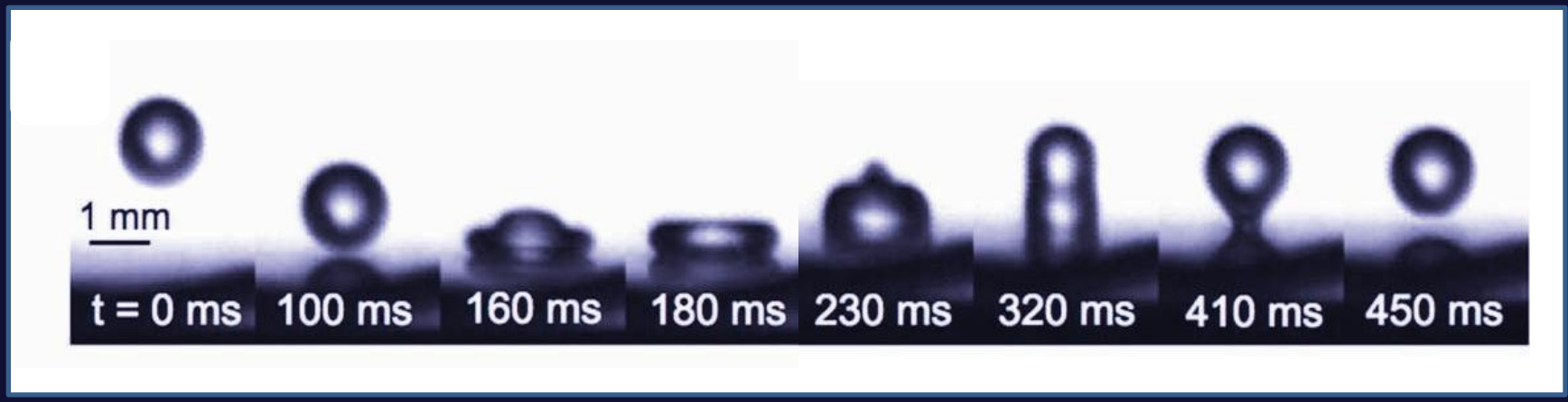


O desenvolvimento de tensões internas em restaurações predispõe a fraturas

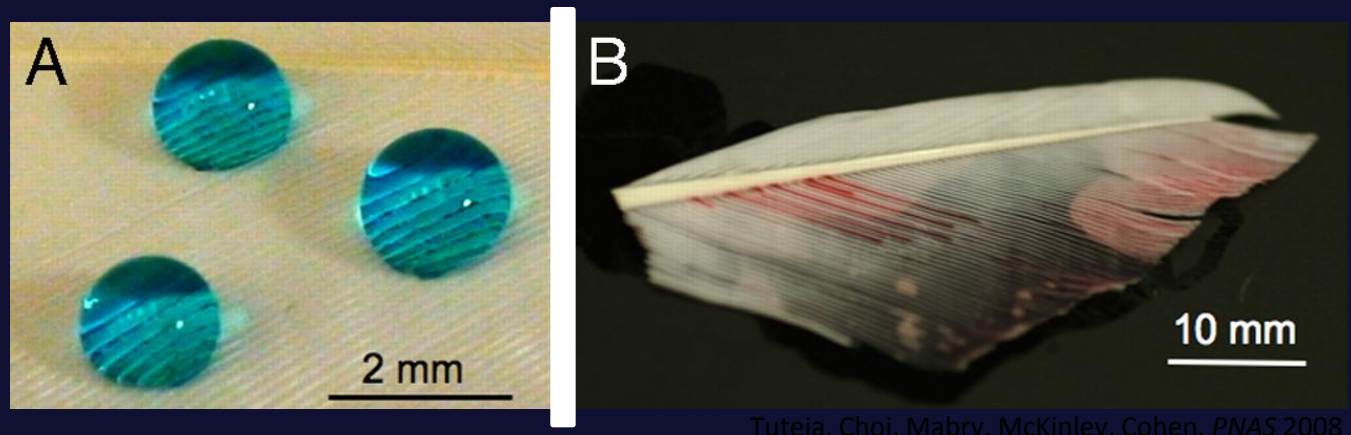


Silikas, Eliades, Watts. *Dent Mater* 2000



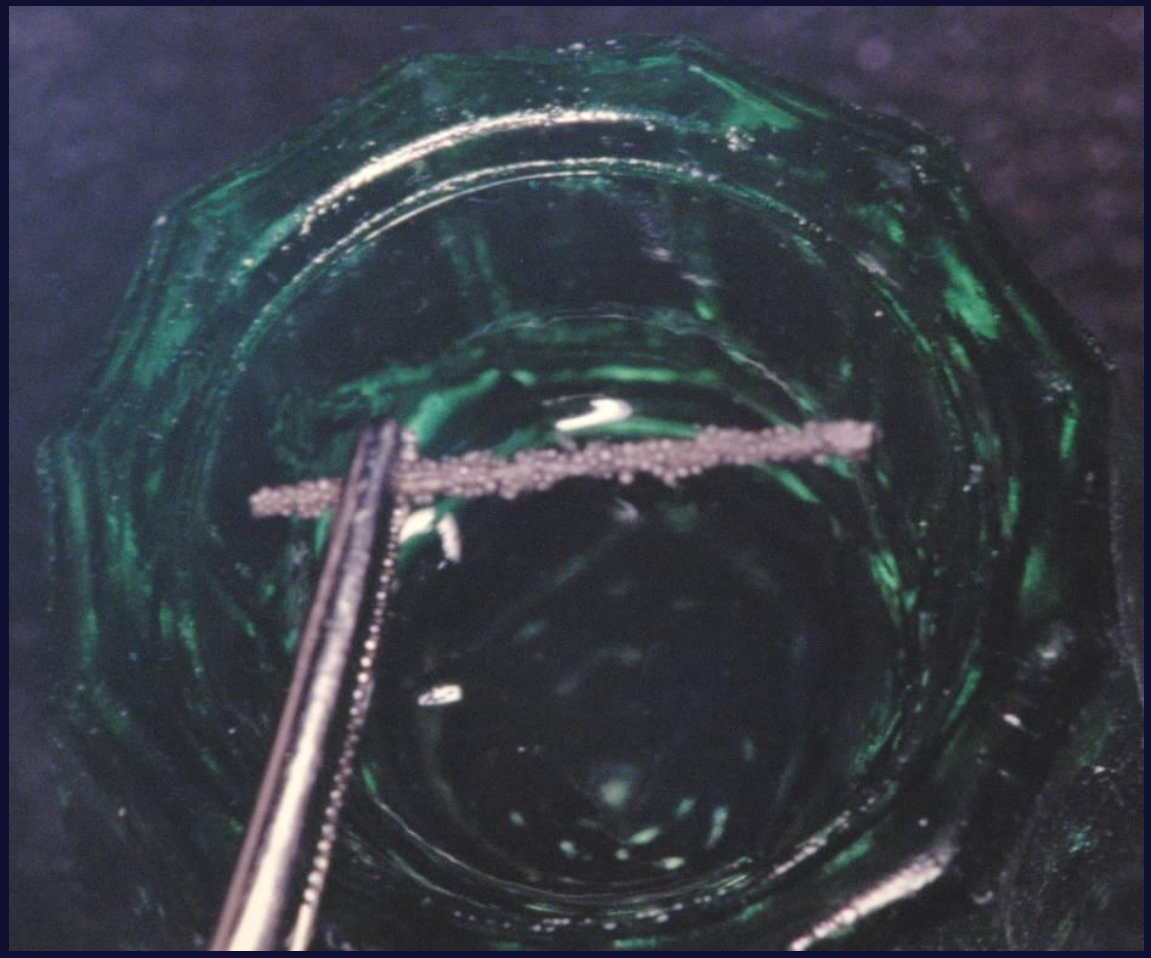


Tuteja, Choi, Mabry, McKinley, Cohen. *PNAS* 2008

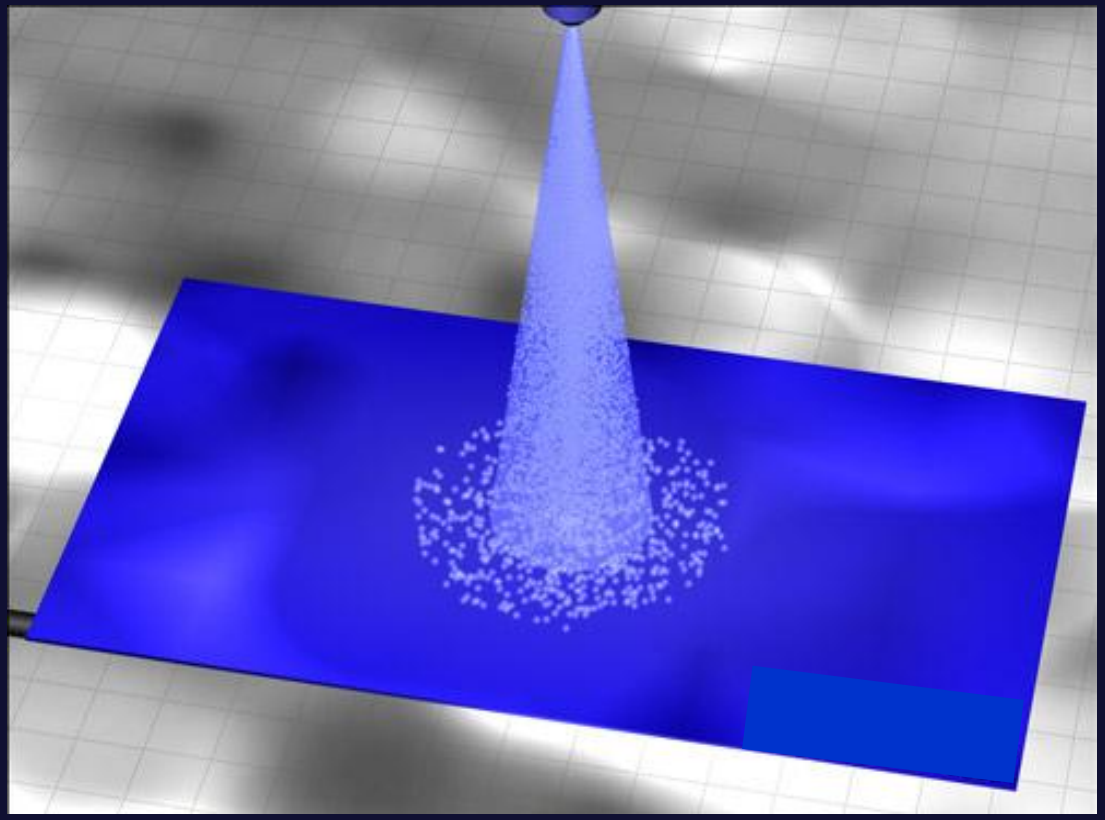


Tuteja, Choi, Mabry, McKinley, Cohen. *PNAS* 2008





Tensão superficial



Adesão à estrutura dental

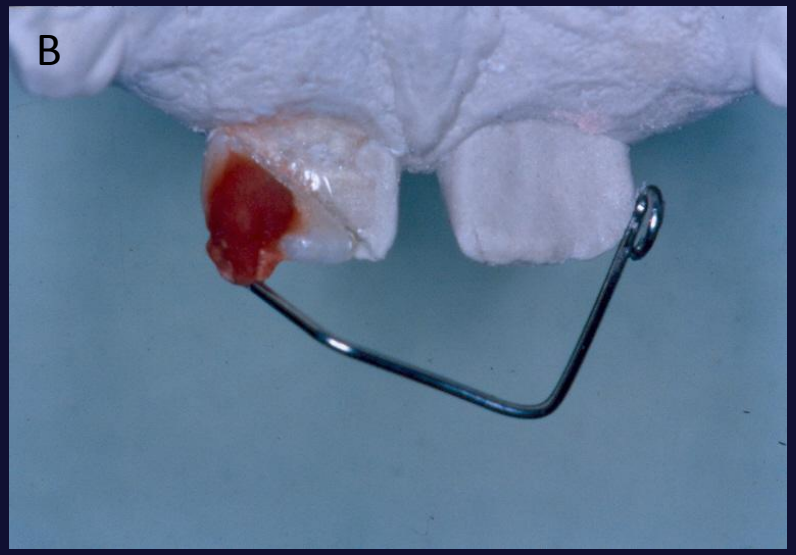


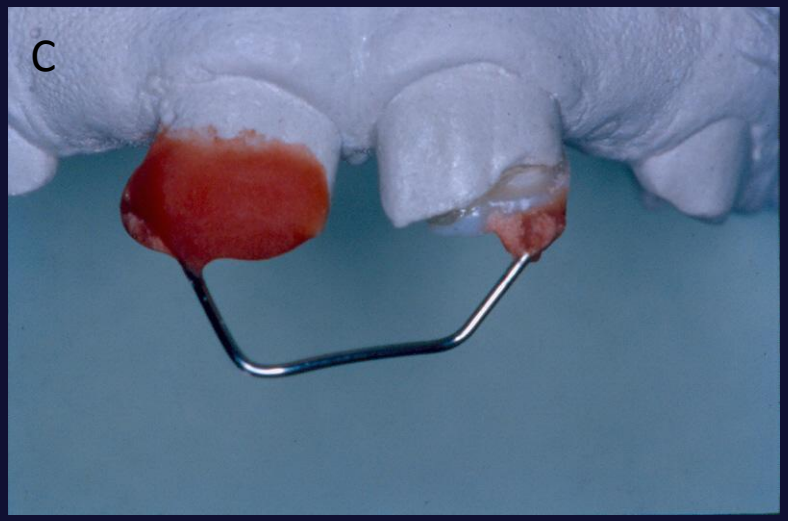












Rodrigues Filho, Bianchi, Santos, Oliveira. *J Dent Res (Spec Iss)* 1995



