

Than hoạt tính



Than hoạt tính là gì?

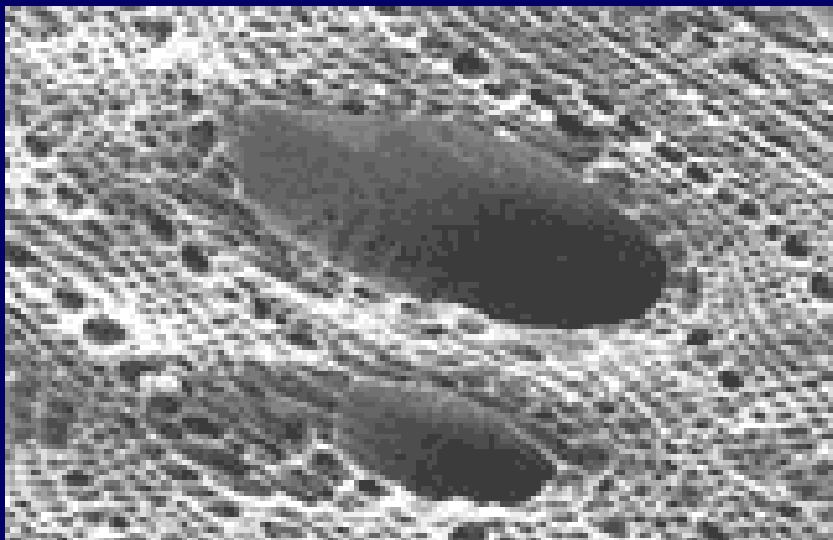
- Than hoạt tính là dạng **amorphous của cacbon**,
- **không giống với**
 - kim cương,
 - graphit,
 - fullerenes hay
 - ống nano và
 - than củi: có chứa cặn hữu cơ, ít xốp hơn, diện tích bề mặt nhỏ hơn



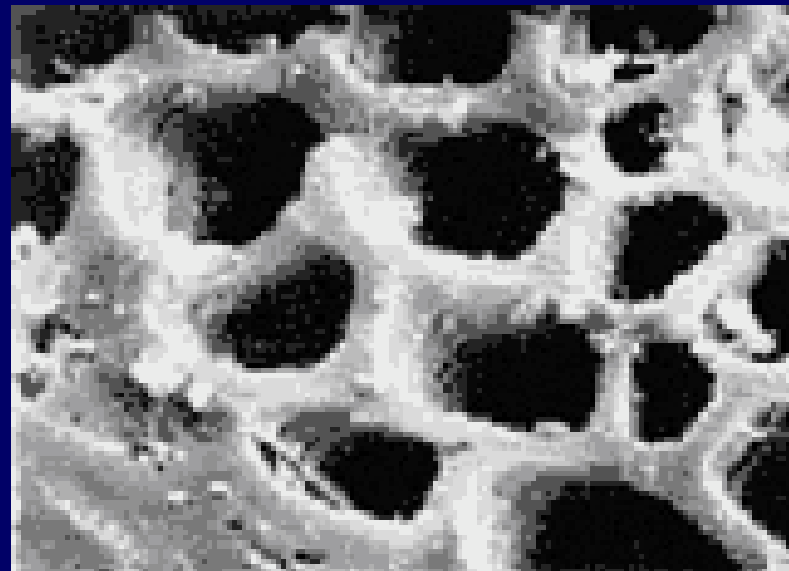
**Sản xuất than hoạt tính
từ nhiều nguồn nguyên
liệu khác nhau**

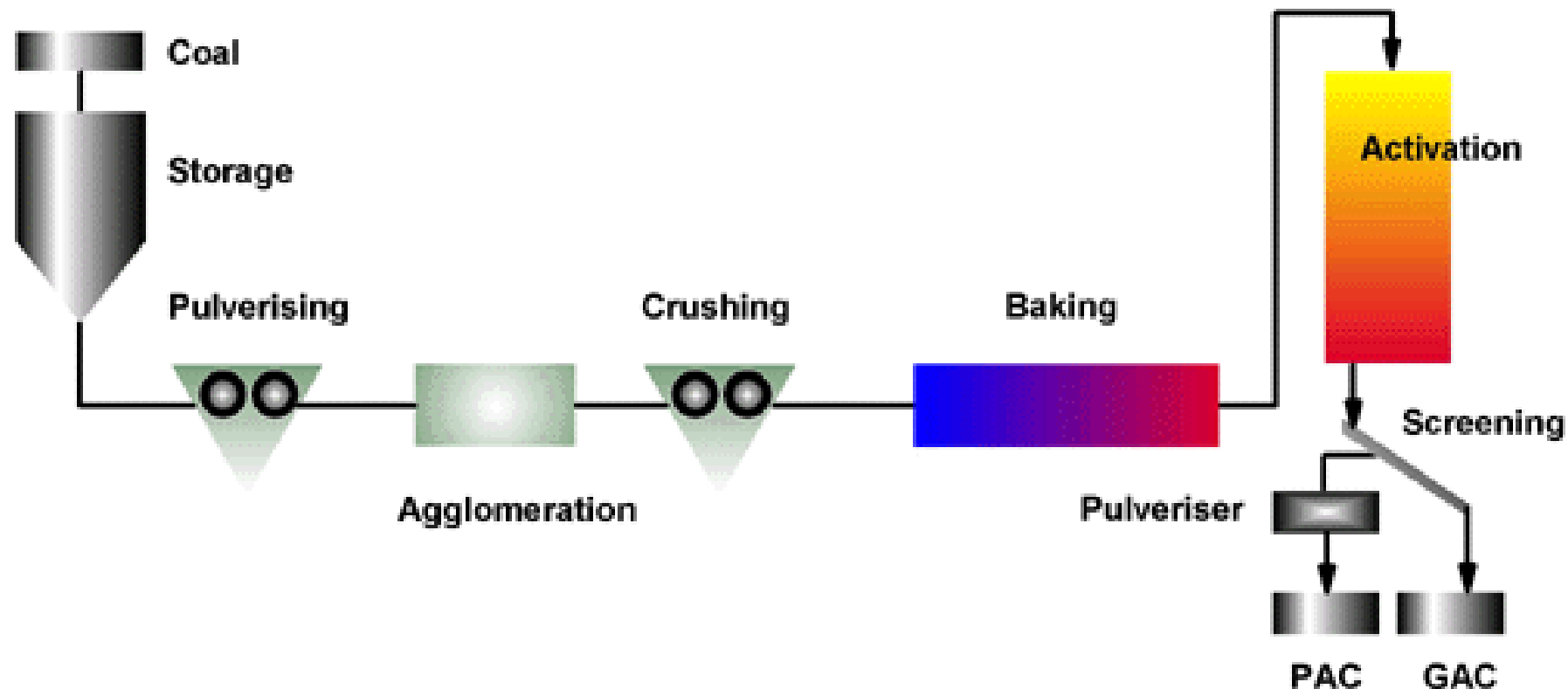
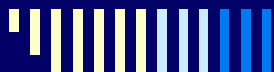


Cấu trúc than hoạt tính dạng hạt



Sản xuất than hoạt tính từ gạo dứa





SẢN XUẤT THAN HOẠT TÍNH

Manufacture of activated carbon

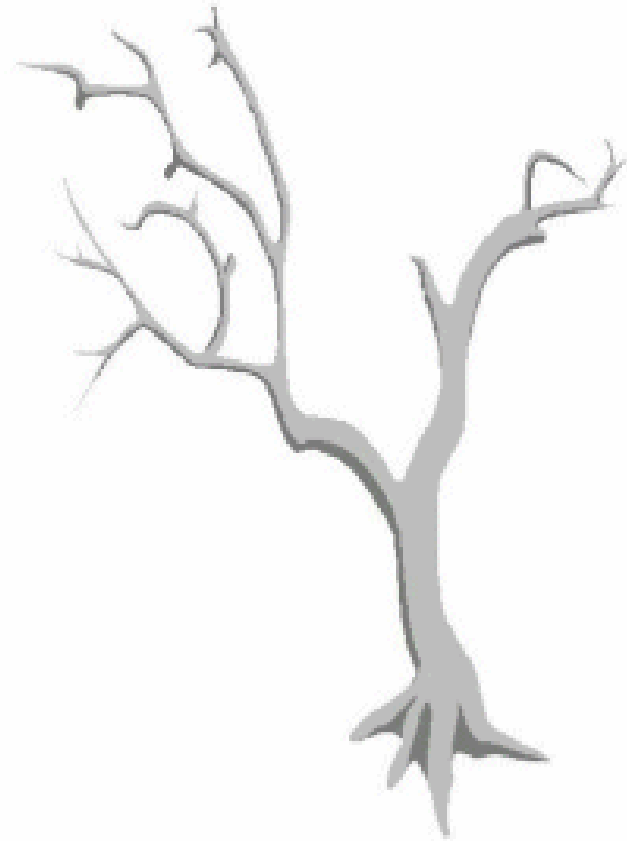
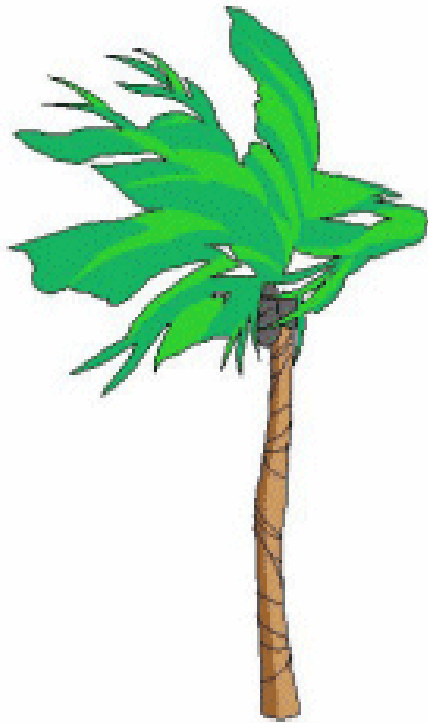
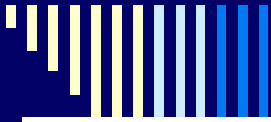


Multiple Hearth ↑

ACTIVATION FURNACE TYPES

Rotary kiln →

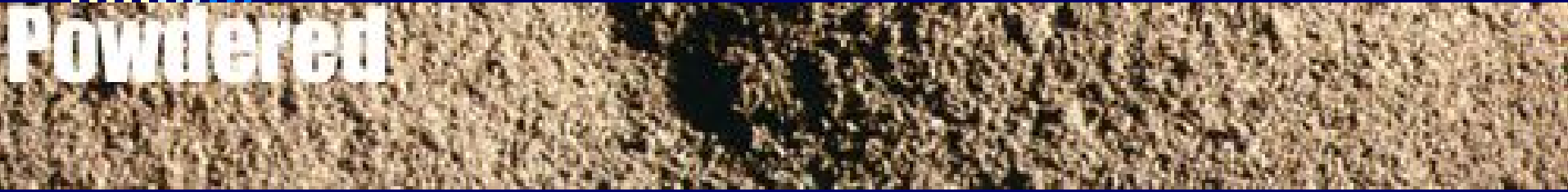




**Các dạng vật lý của than hoạt tính
phụ thuộc vào nguồn nguyên liệu**



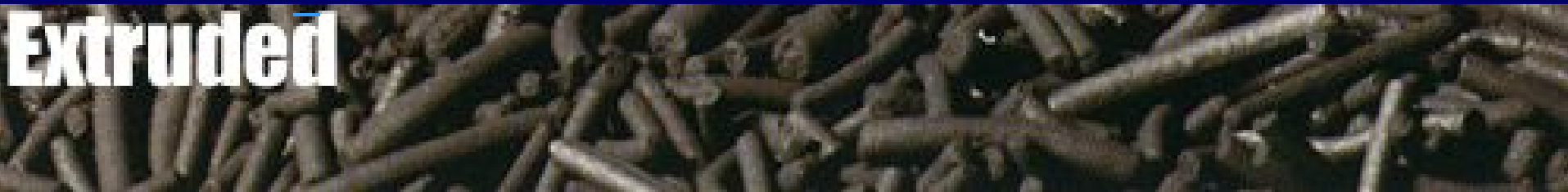
Powdered



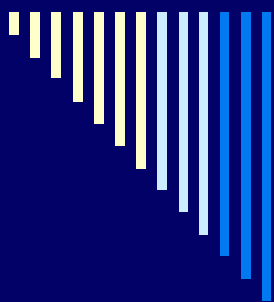
Granular



Extruded



**Các dạng than hoạt tính –
phân loại theo kích thước**

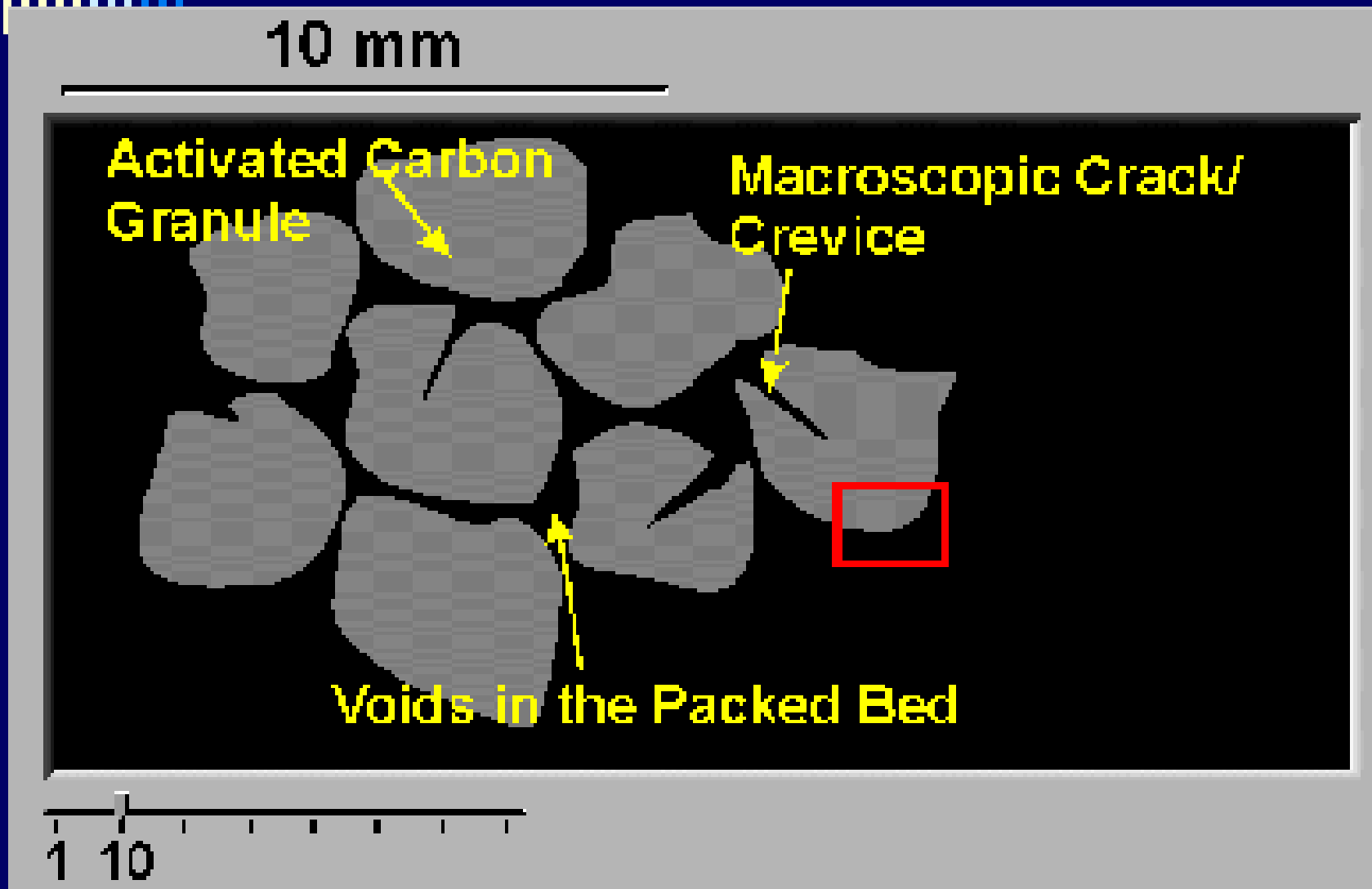


So sánh than hoạt tính dạng hạt và dạng bột (GAC – PAC)

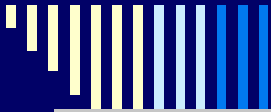
<u>Thông số</u>	<u>Đơn vị</u>	<u>GAC</u>	<u>PAC</u>
Tổng diện tích bề mặt	m ² /g	700 – 1300	800 -1800
Tỉ trọng thể tích	kg/m ³	400 – 500	360 – 740
Tỉ trọng hạt	kg/L	1.0 – 1.5	1.3 – 1.4
Kích thước hạt	um	600 – 900	5 – 50

GAC: granular activated carbon

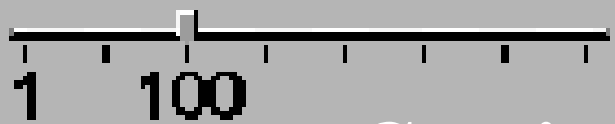
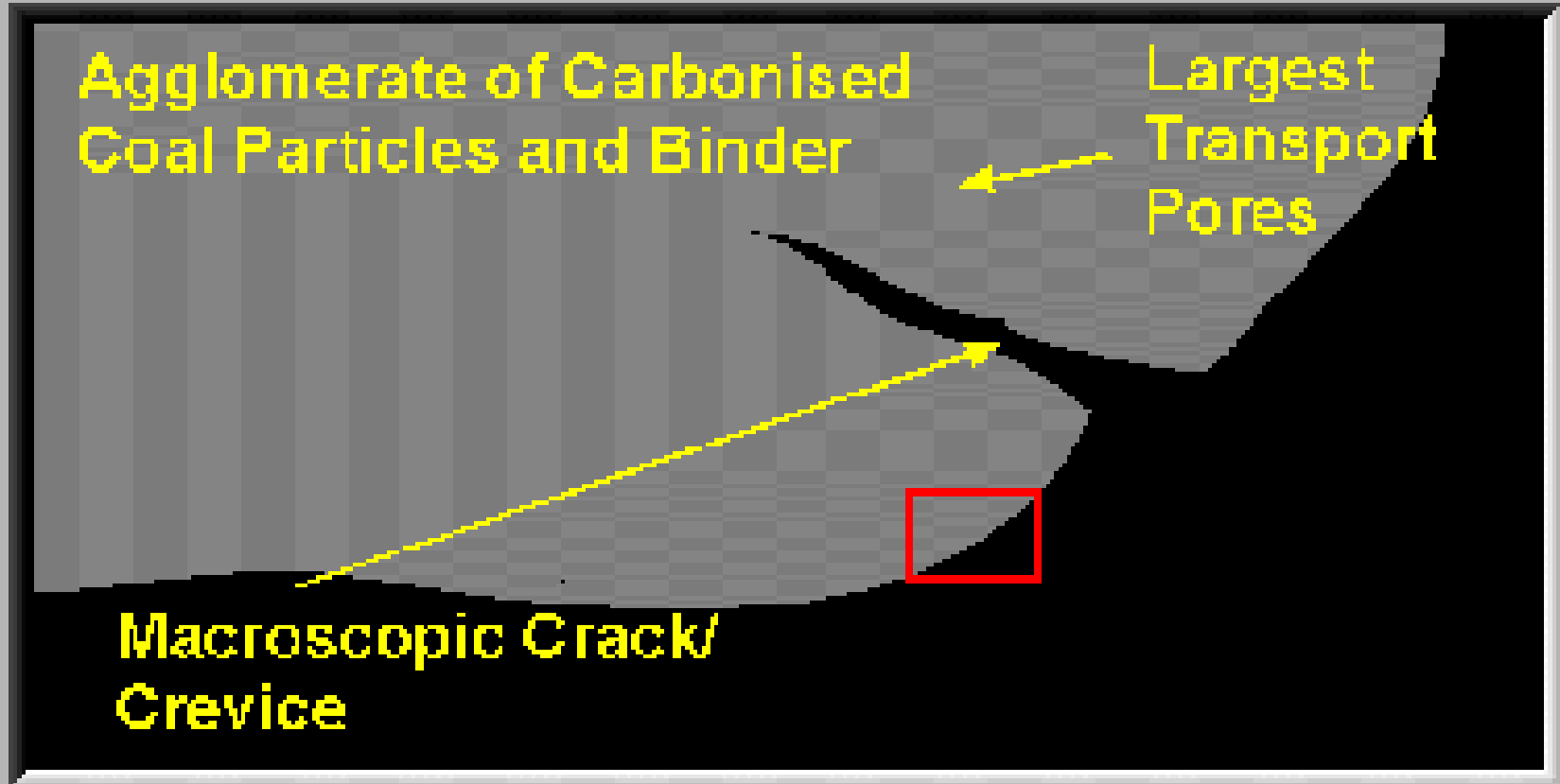
PAC: powdered activated carbon



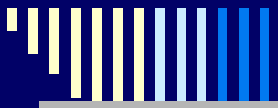
— First magnification of carbon granules —



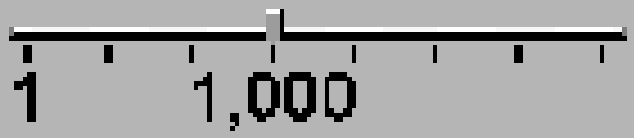
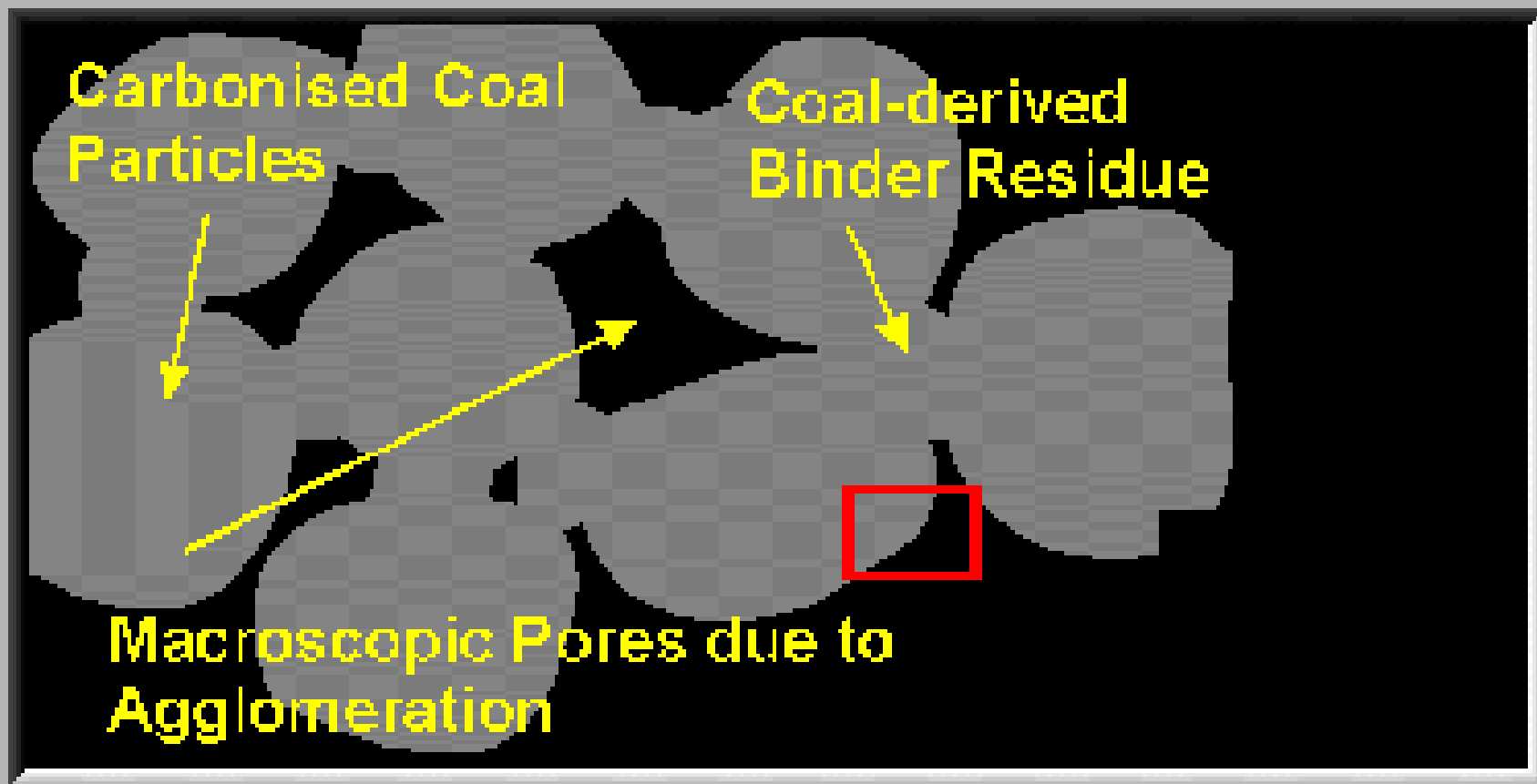
1 mm



Continued magnification

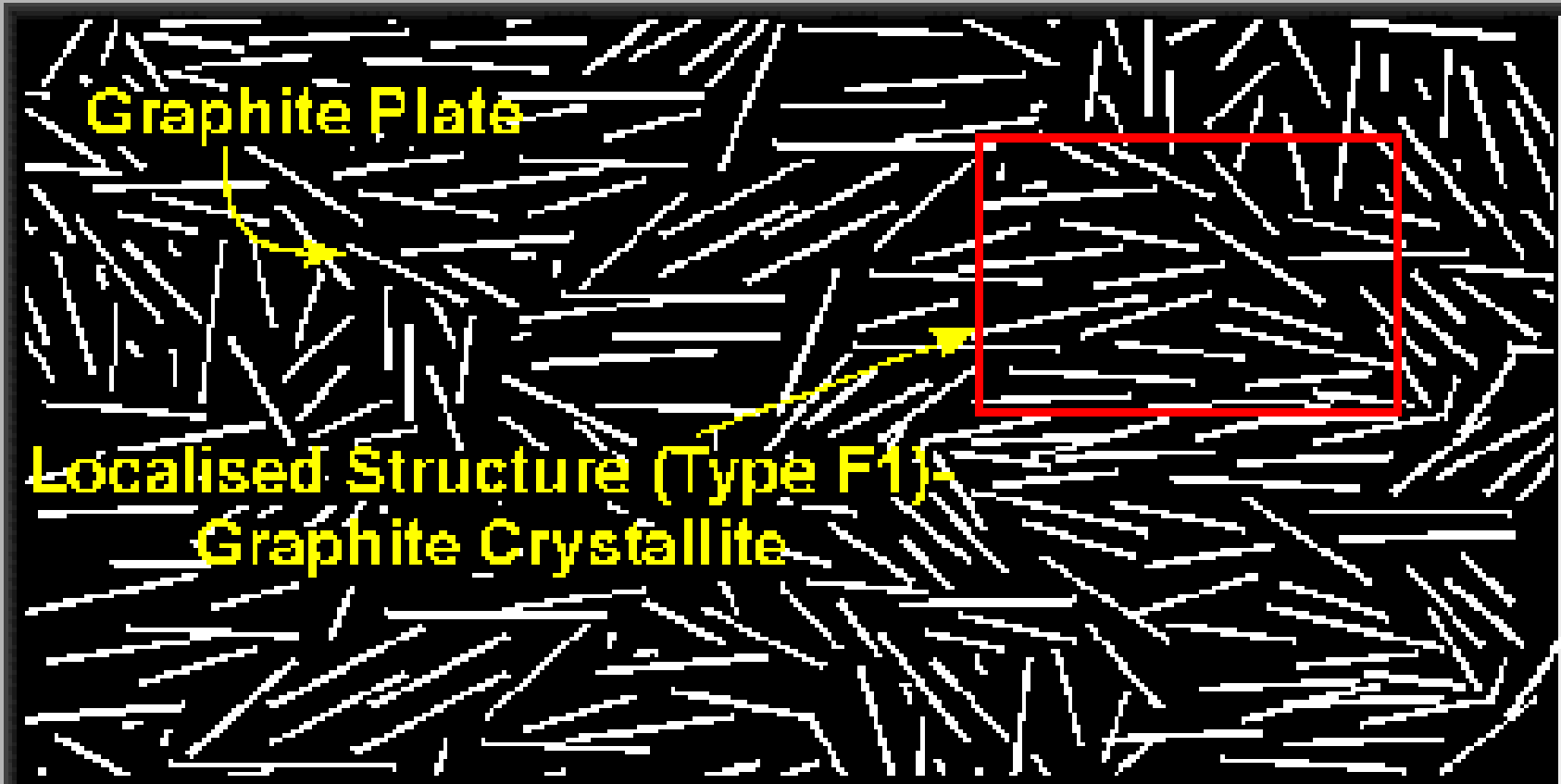


100 μm



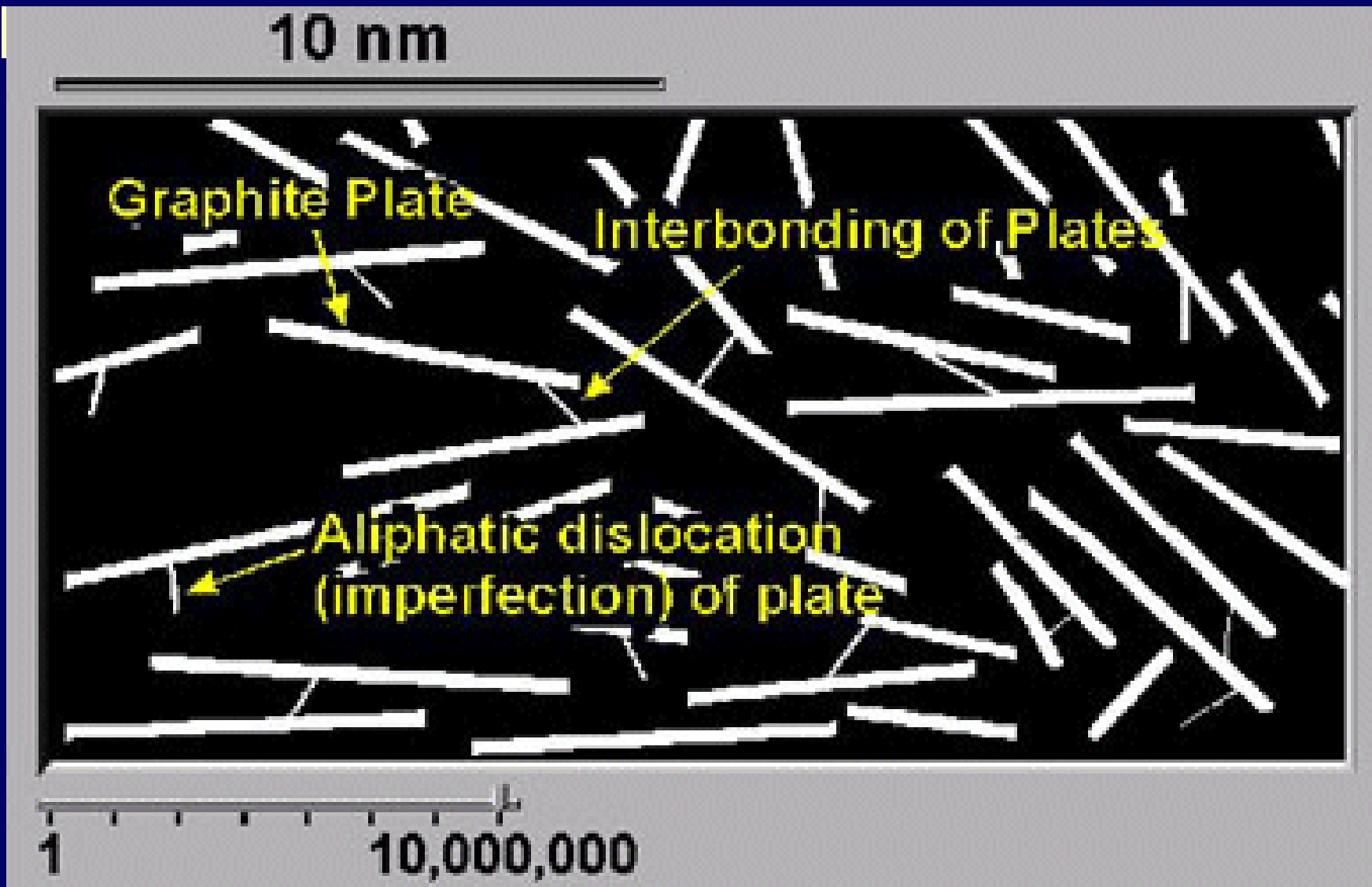
Continued magnification

100 nm



1 1,000,000

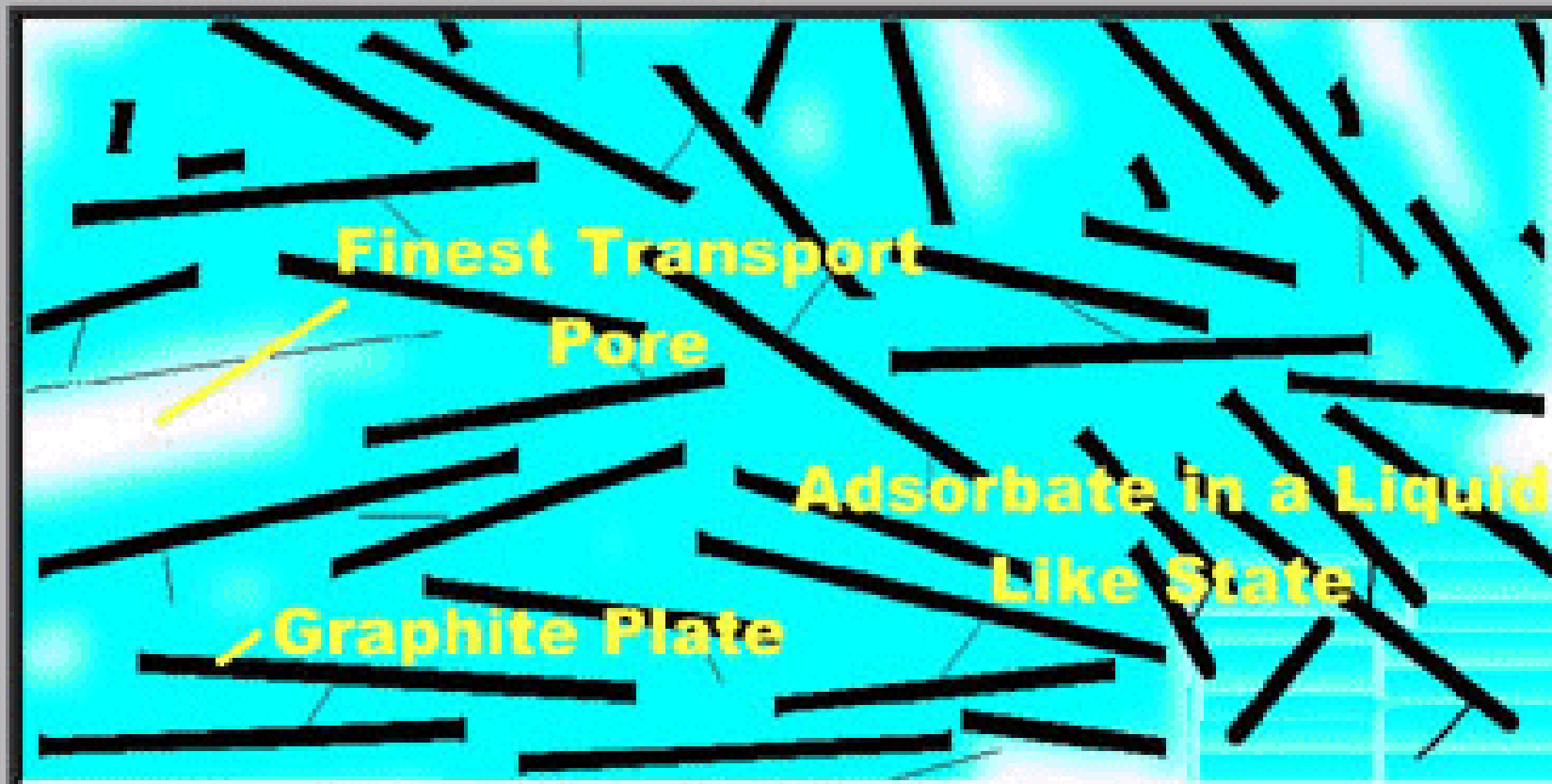
Continued conceptual magnification



**Continued conceptual
magnification**



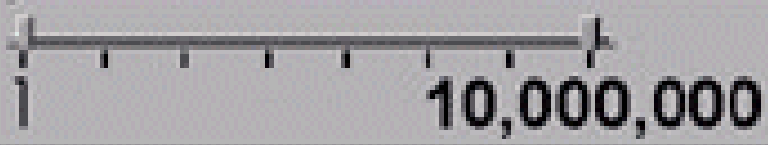
10 nm



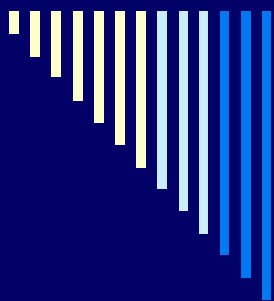
Finest Transport Pore

Adsorbate in a Liquid Like State

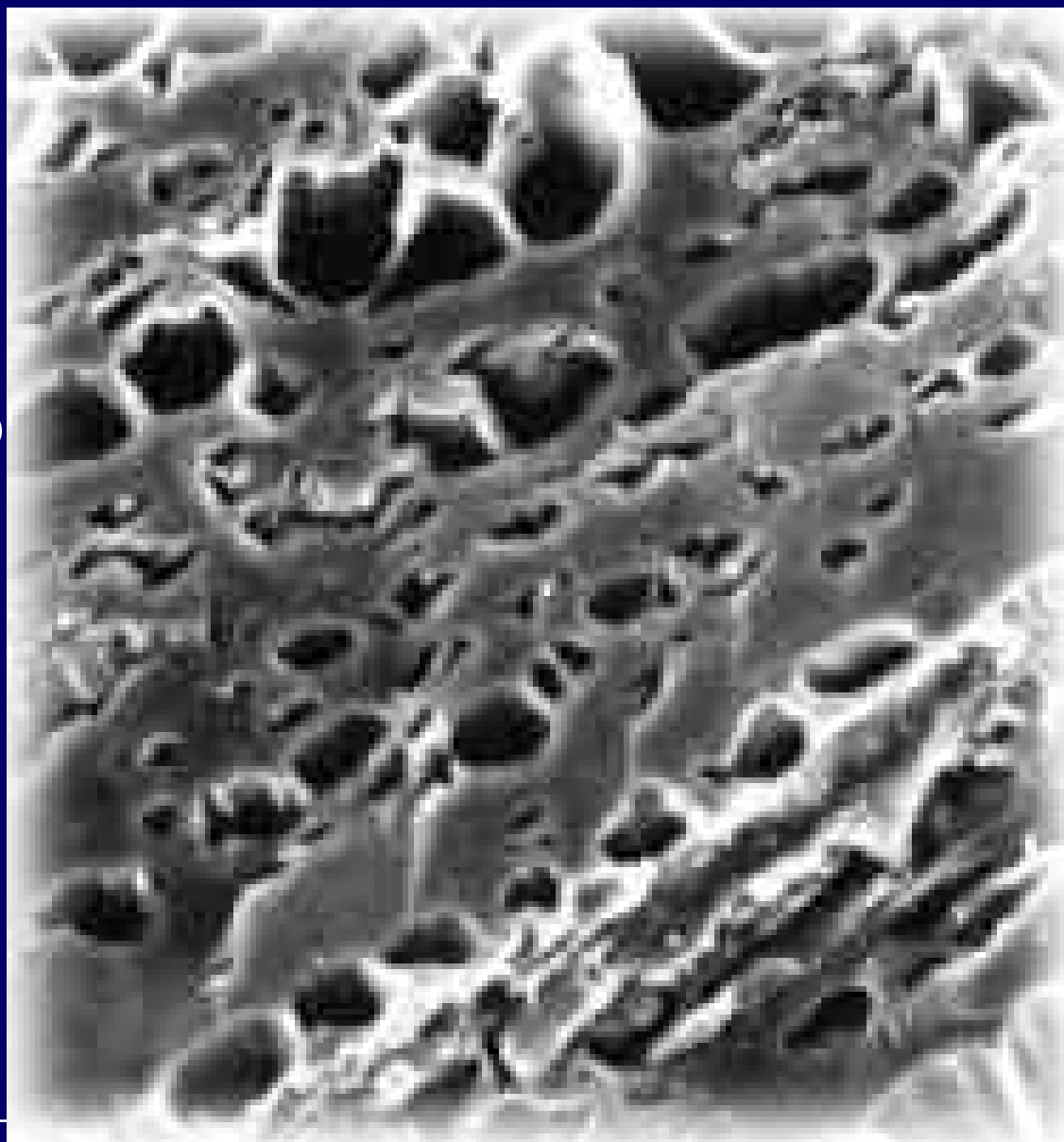
Graphite Plate

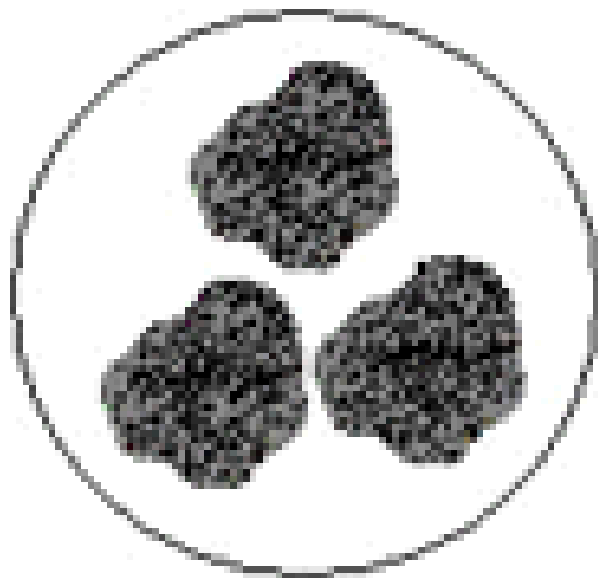


Continued conceptual magnification

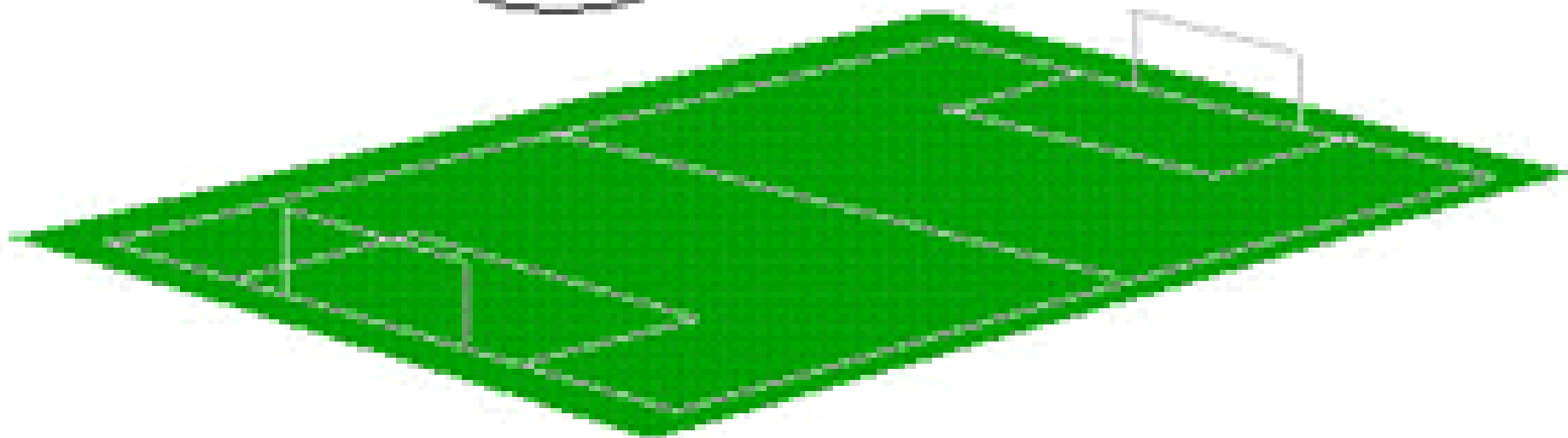


Hình ảnh quét
kích thước vi xố
của than hoạt
tính dạng hạt
GAC





**Diện tích bề mặt
của một vài gam
than hoạt tính**



**A single gram of AC can have 400 to 1,200 m² of
surface area, 98% of it internal!**