FRYING




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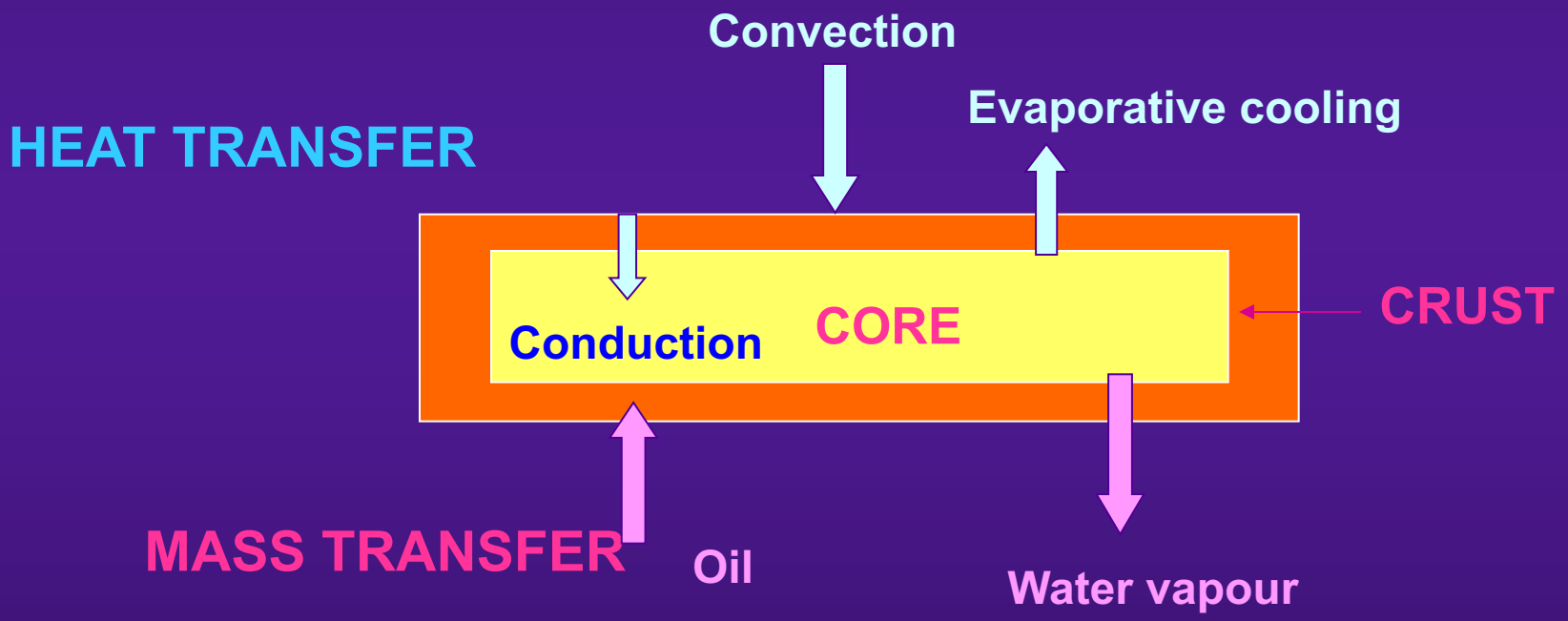
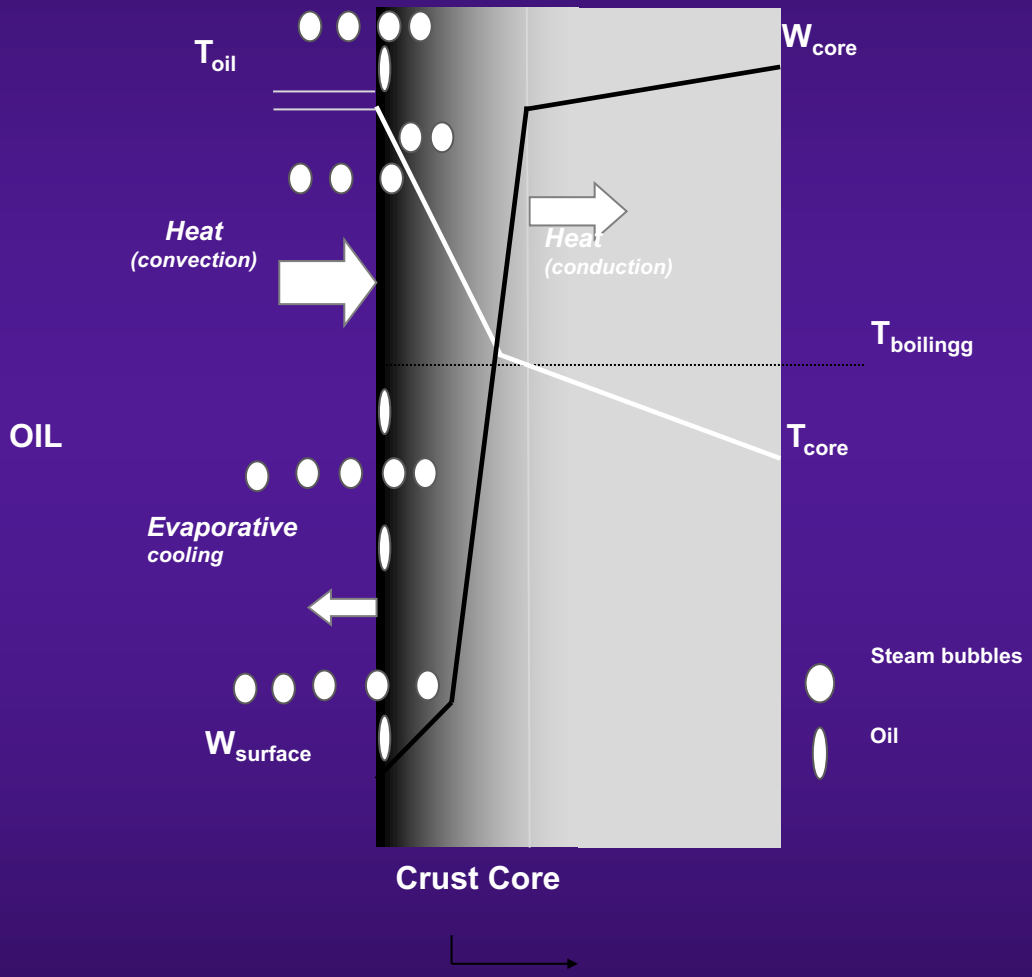
Schematic representation of deep-fat frying of a food strip



Scheme of heat and mass transfer during frying, and the prevailing temperatures and moisture profiles (Miranda and Aguilera, 2006).

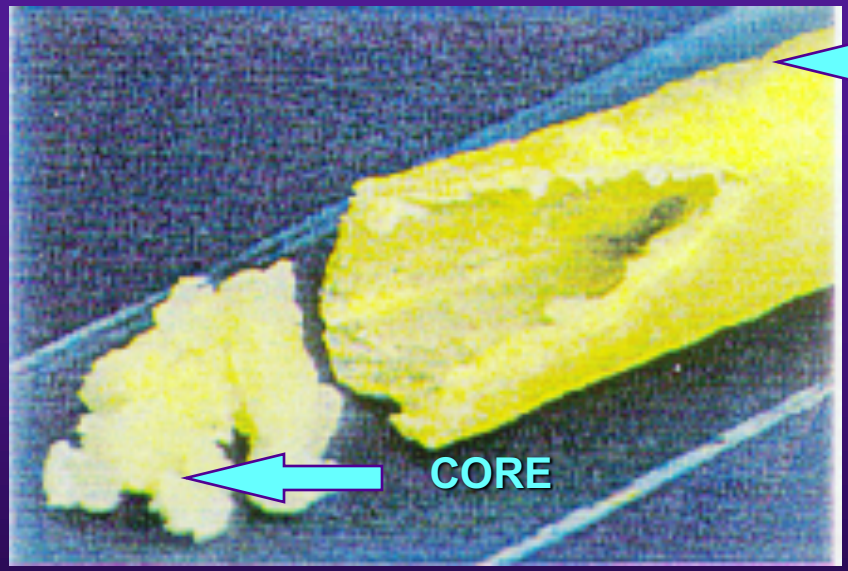


Chip

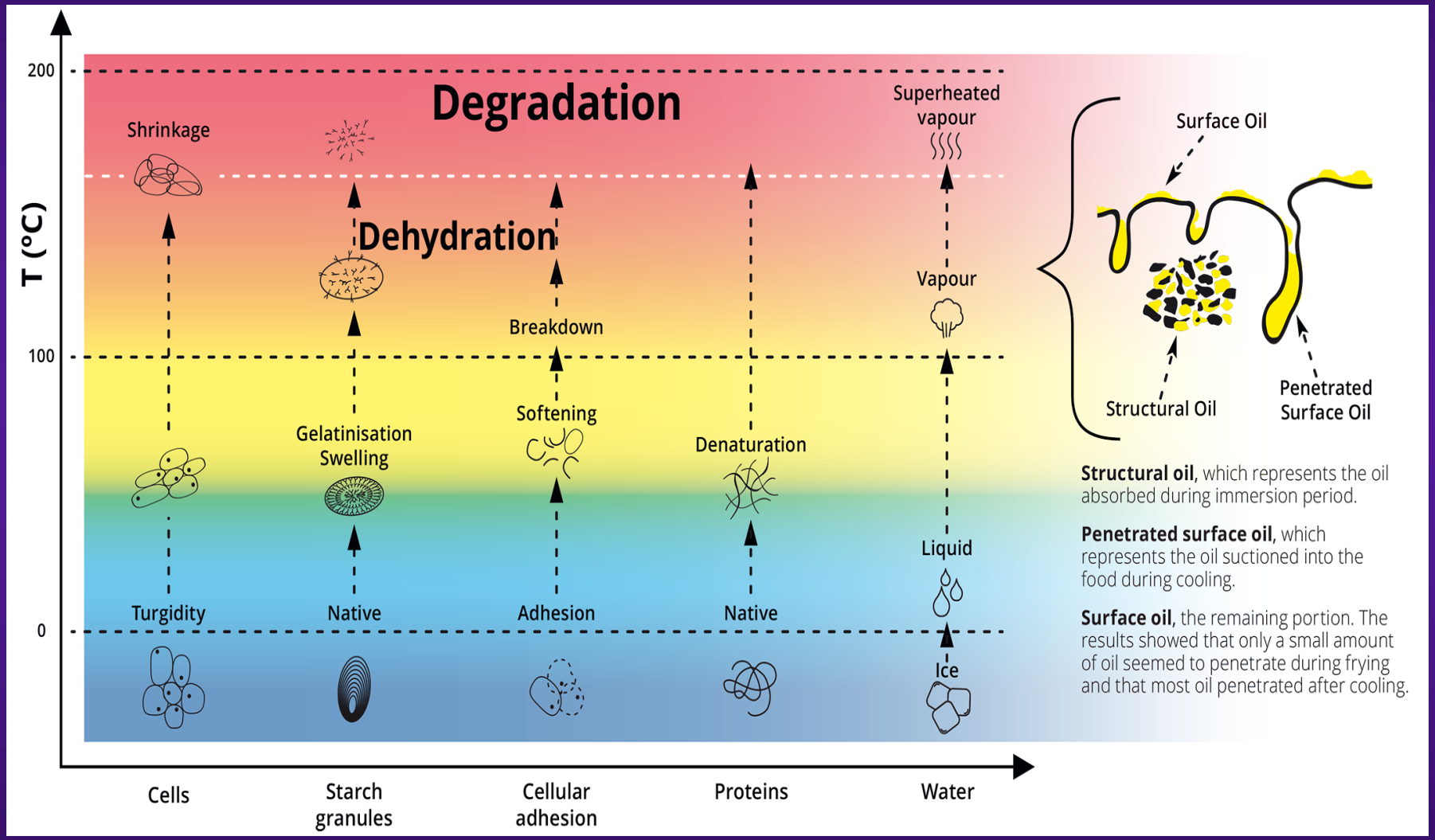
Raw potato

FRYING

French fry



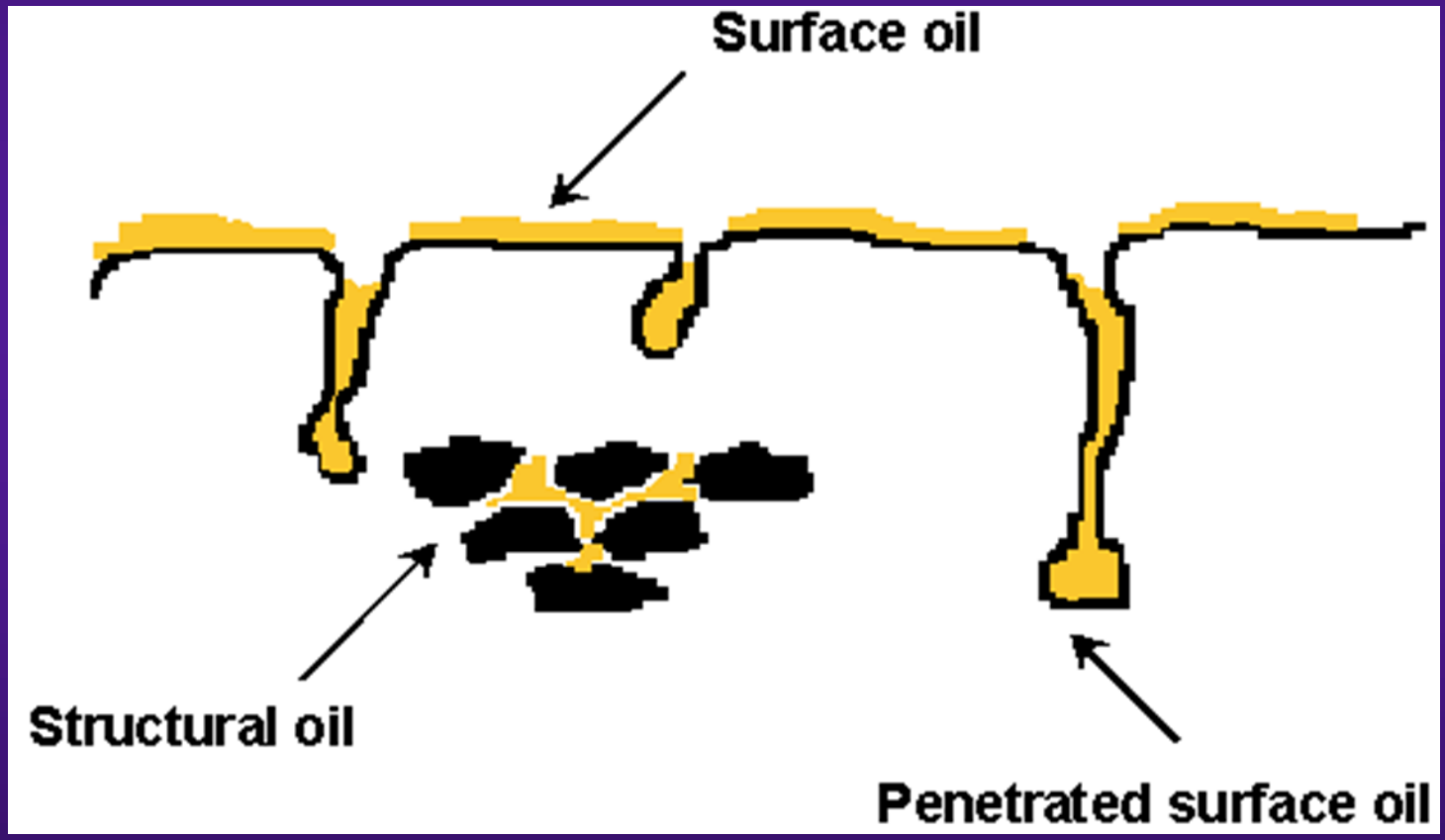
Major microstructural changes occurring during frying (adapted from Bouchon *et al.*, 2003)



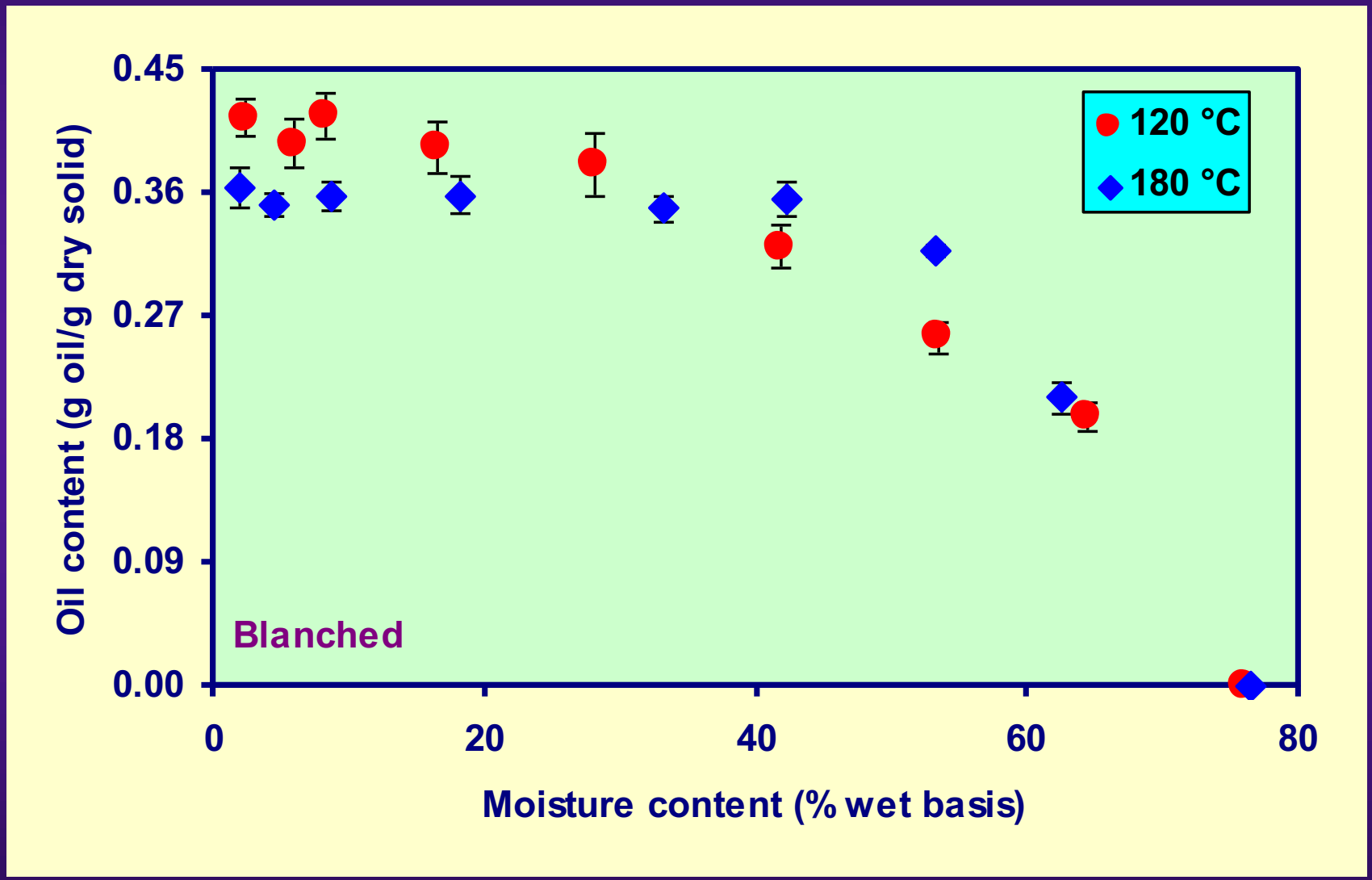
Typical water content and oil content of some fried foods

Product	Mean water content (%)	Mean oil content (%)
Potato chips	2.5	34.6
Corn chips	1.0	33.4
Tortilla chips	1.8	26.2
Doughnuts	20.8	22.9
Onion rings	28.5	18.7
Chicken breast-breaded or breaded	45.7	18.1
Fish fillet-battered or breaded	53.6	12.9
French fries/Par-fried	39.5/37.9	14.8/7.6

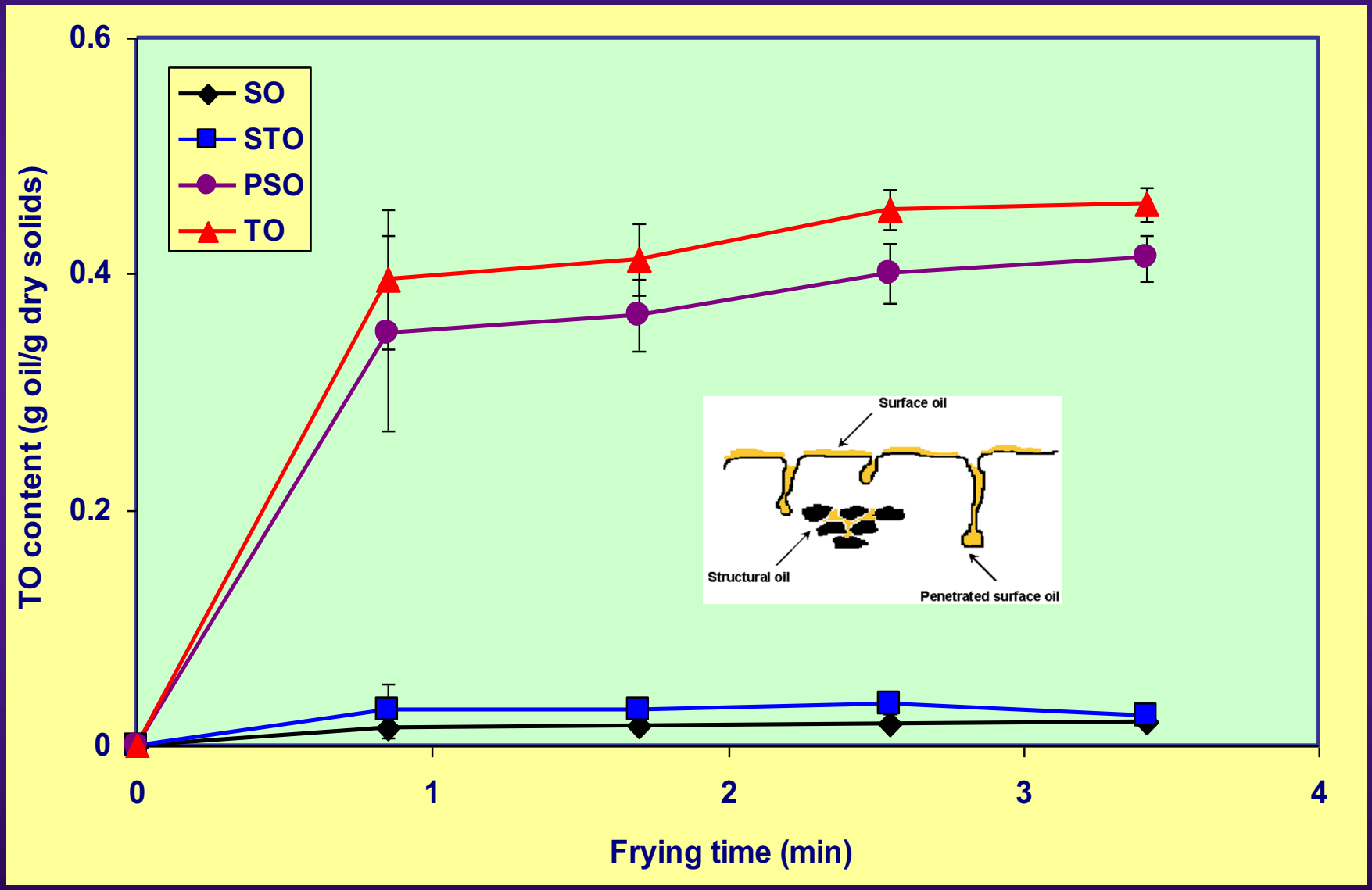
Diagram showing the three locations of oil in the crust of a fried potato piece according to Bouchon et al. (2003)



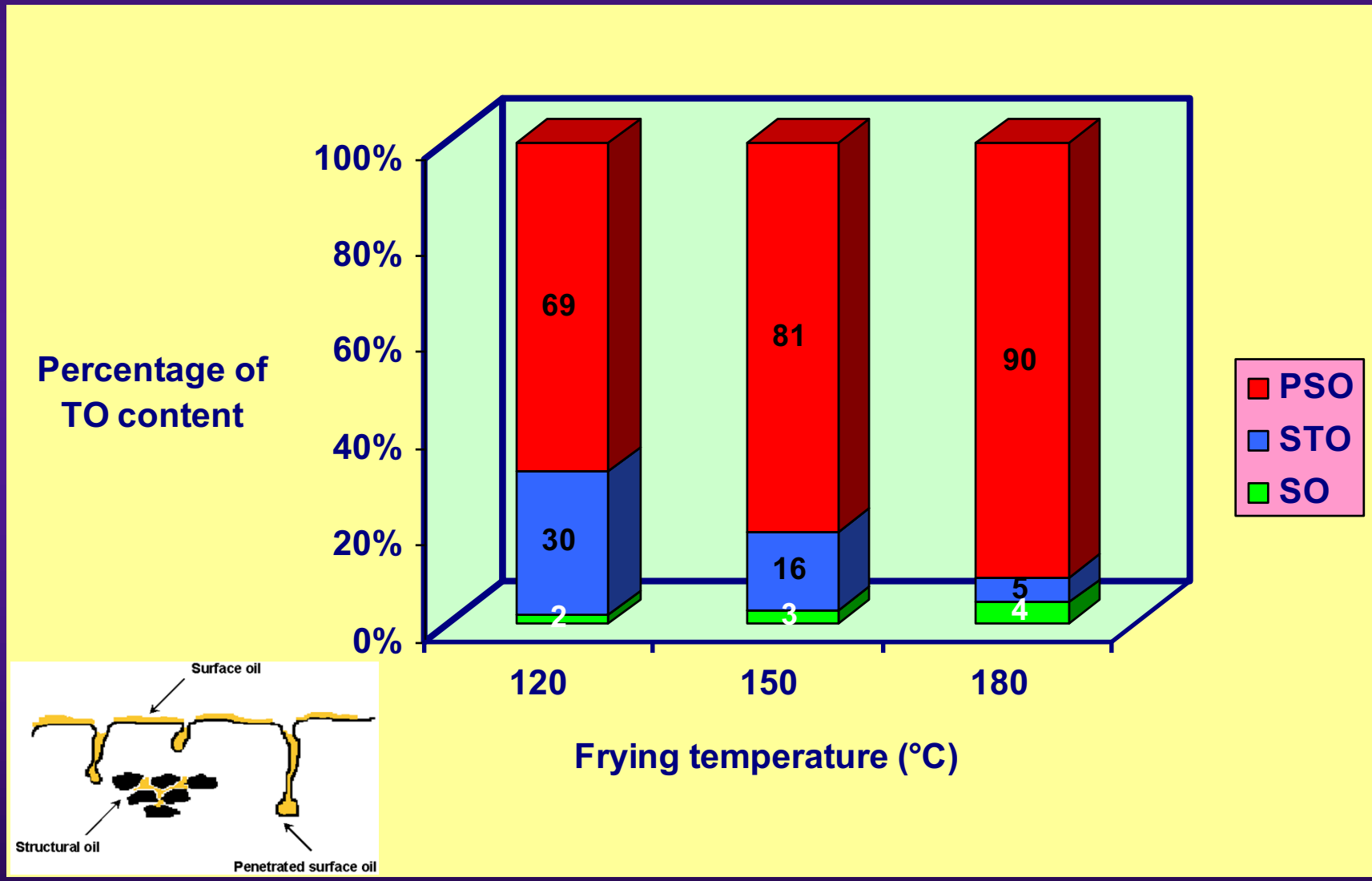
Contenido de aceite de aceite *vs.* humedad de rodajas escaldadas de papa fritas a 120 °C y 180 °C.



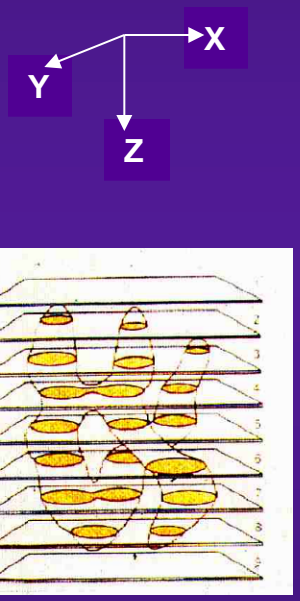
Kinetics of oil uptake fractions and total oil in control potato slices during frying at 180 °C. TO: Total oil; PSO: Penetrated surface oil; SO: Surface oil; STO: Structural oil.

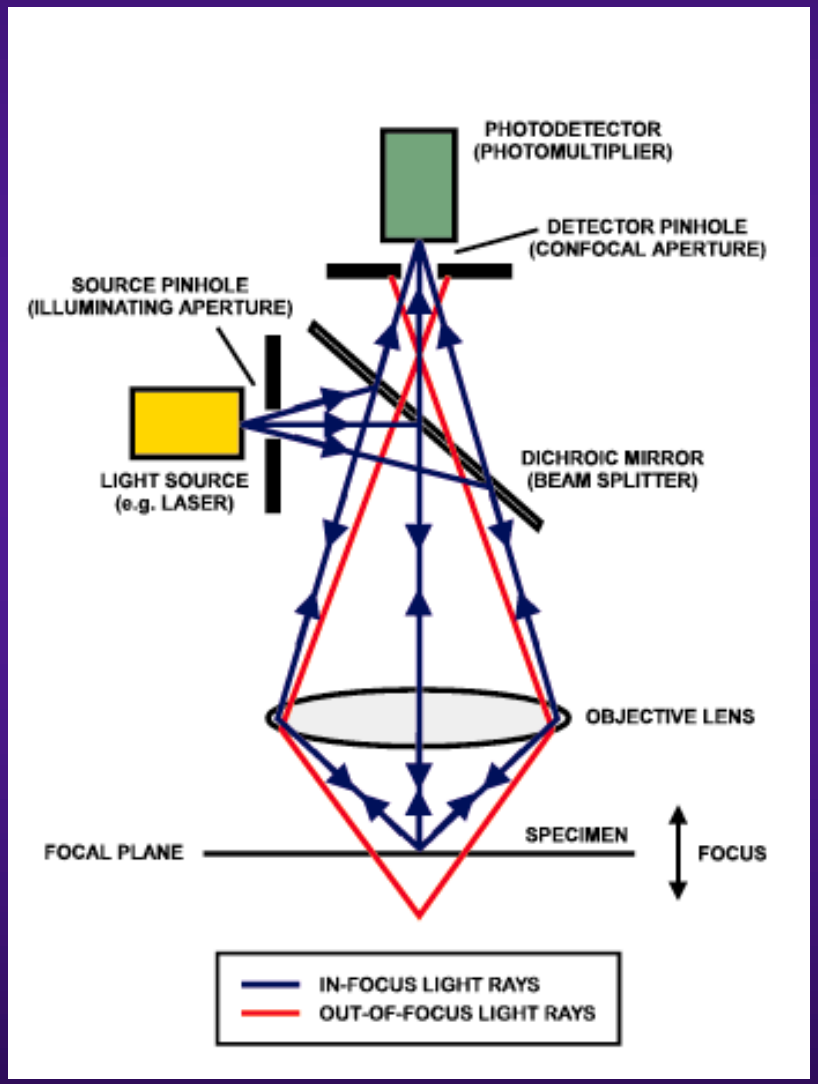


Oil distribution in final potato slices (moisture content ~ 1.8%, total basis) fried at 120, 150 and 180 °C. TO: Total oil; PSO: Penetrated surface oil; SO: Surface oil; STO: Structural oil.



Functional diagram of a Confocal Laser Scanning Microscope (CLSM)





(A) Gallery of confocal images in fluorescence mode of oil distribution in a potato chip fried in stained oil (170 ºC, 3 min) observed at 20X (each square of the gallery is 640x640 mm). (B) 3-D reconstruction from the serial sections in figure A using Imaris software.