

JULIAN VINCENT
UNIVERSITIE OF BATH AND NOTTINGHAM
J.F.V.VINCENT@BATH.AC.UK

"If it's sclerotised it must be dry: phenolic tanning controls hydration"

The mechanism of phenolic tanning of insect cuticle, and other extracellular protein structures such as byssus and perisarc, has been supposed to be due to specific covalent cross links. Yet cuticle can be swollen in a strong H-bond breaker, an observation that instantly and irrevocably disproves this theory. Physicochemical expulsion of water with associated encouragement of extensive secondary bonding is a much more robust mechanism which accords closely with experimental observation, and suggests stabilisation mechanisms which would give advantages for technical composite materials.