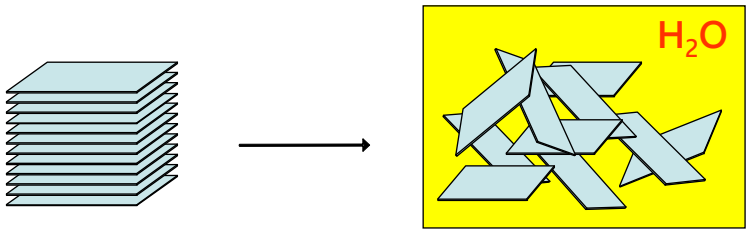
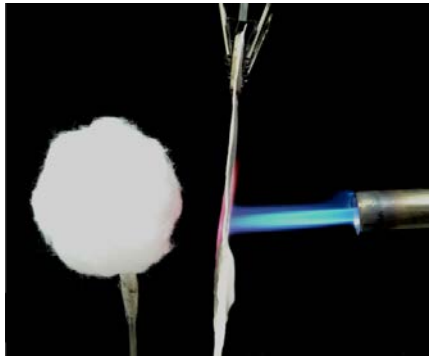
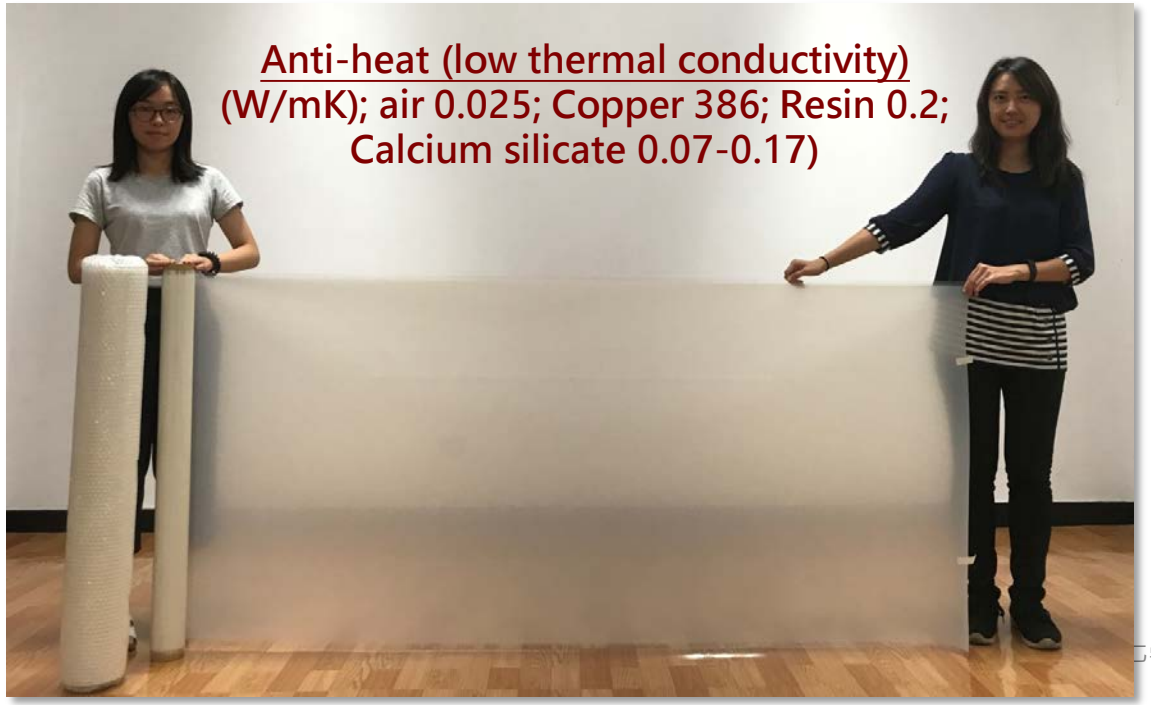
NSP Thin Films for Anti-heat-transfer and anti-flame-propagation

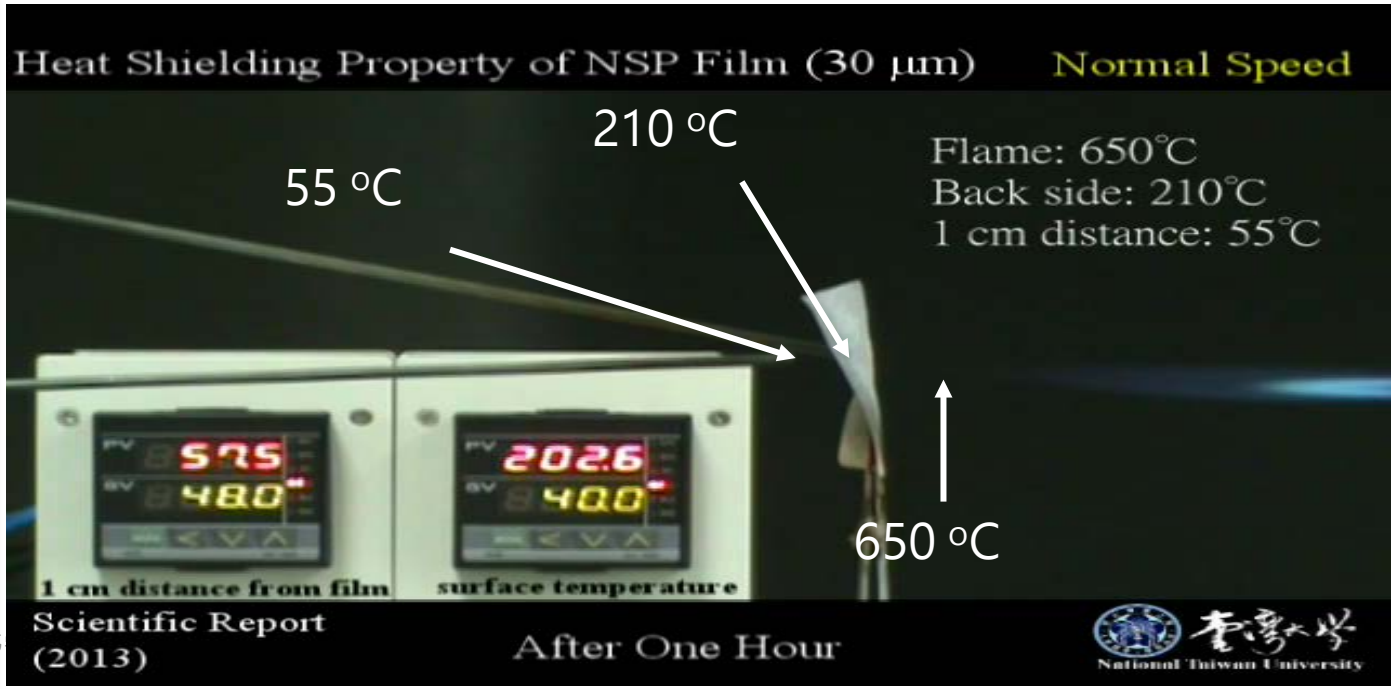
(by NSP self-piling coating technique; with composition of 60% silicates and 40% air-void Entrapped)
YC Wang, TK Huang, SH Tung, TM Wu and JJ Lin*, Scientific Reports, 2013, 3, Doi:10.1038/srep02621.
"Self-assembled Clay Films with A Platelet–void Multilayered Nanostructure and Flame-blocking Properties"





No penetration to z-axis!
No propagation over x,y-axis!

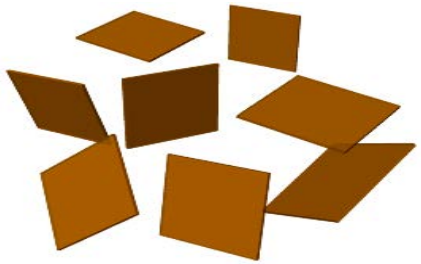




NSP --可自行排列(self-assembling)成薄膜 30 micrometers, 且內含有30-40 % air-void –

此奈米級多層結構之 真空vacuum層狀結構，為阻熱傳、阻火焰傳播之基本原理 --不同於傳統耐燃(有機磷或鹵素)材料

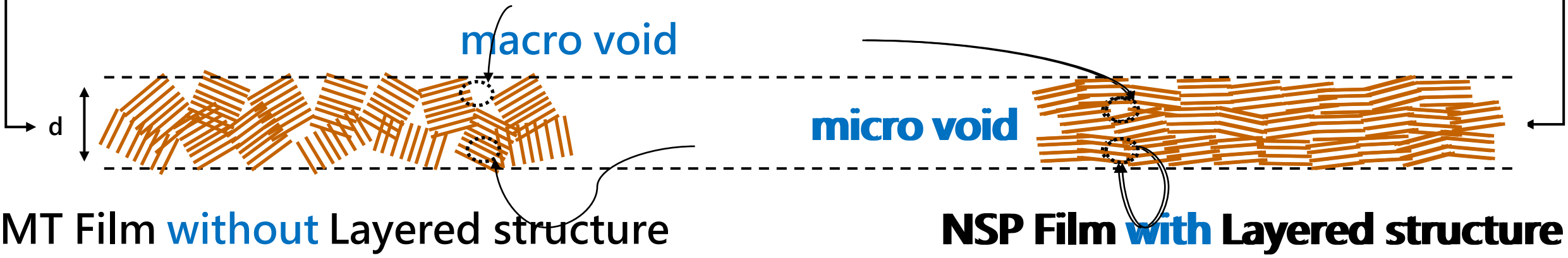
Clay Exfoliation



Primary stack of natural clay
(ca. 8-9 platelets/stack)

Natural Silicate Platelets (NSP)

關鍵技術: 黏土經過脫層以後才能有1.0 nm thickness of NSP ！



NSP thin-film with 40 % air void!
Enabling high efficient barrier for heat transfer and flame propagation