Prof. Beyong-Soo Bae
CEO
Solip Tech

Abstract: Siloxane Hybrid Material Solution for Foldable Display Cover Window Film

In order to realize foldable/flexible displays, most of all, cover window glass should be replaced with a plastic film combined with a hard surface coating. it must be mechanically strong with non-scratch surface but flexible and elastic sufficiently to be folded. However, it is challenging to achieve contradictory properties of strength, flexibility and resilience at the same time. We have proposed innovative cover window material solution enabling foldable display in practical : flexible hard coating material (Flex9H®) and transparent glass-fabric reinforced plastic (ClearFRP®).
Flex9H® is a transparent siloxane hybrid coating material with excellent flexibility and impact resistance as well as high surface hardness. It has been applying for non-scratch coating on cover window films/plastics of foldable and 3D bended displays. ClearFRP® is a composite fabricated by impregnation of a woven glass-fabric with a siloxane hybrid material as the matrix. This reinforced composite film shows high strength and modulus, low thermal expansion and high thermal stability. Originally developed for transparent flexible display substrate film, it is more interested in application of cover window films/plastics in various types of flexible / wearable displays. Thus, we have developed new cover window or protective films of flexible/wearable displays, StingrayTM, which is a Flex9H® coated/laminated ClearFRP® film.

Bio:
Professor Byeong-Soo Bae is a founder and CEO of Solip Tech that is a KAIST spin-off company to commercialize his own developed hybrimer (sol-gel siloxane materials) technology for display and optoelectronic applications. Also, he is a Professor of Materials Science and Engineering, and Director of Wearable Platform Materials Technology Center in KAIST, Korea. He has worked on sol-gel based oxide, hybrid and composite materials for displays and optoelectronic applications such as waveguides, micro-optics, PDP, LCD, OLED and LED etc.

He received Ph.D from University of Arizona, M.Eng. from Drexel University in USA and

B.Eng. from Seoul National University in Korea all in Materials Science and Engineering. He is a member of both the Korea Academy of Science and Technology, and the National Academy of Engineering of Korea. He won many awards including Korea Technology Grand Award and Woongbi Order of Science and Technology Merit.