

# Plastic film is future of 3-D on-the-go

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Ditch the 3D glasses. Thanks to a simple plastic filter, mobile device users can now view unprecedented, distortion-free, brilliant 3D content with the naked eye. This latest innovation from Temasek Polytechnic and A\*STAR's Institute of Materials Research and Engineering is the first ever glasses-free 3D accessory that can display content in both portrait and landscape mode, and measures less than 0.1 mm in thickness.

"The filter is essentially a piece of [plastic film](#) with about half a million perfectly shaped lenses engineered onto its surface using IMRE's proprietary nanoimprinting technology," said Dr Jaslyn Law, the IMRE scientist who worked with TP on the nanoimprinting R&D since 2010 to enhance the film's smoothness, clarity and transparency compared to other films in the market.

To complement the filter, the team developed applications for two software platforms, Apple iOS and Android, which allow users to play 3D content through its filter, in both landscape and portrait formats. The applications also allow 2D pictures taken using mobile devices to be converted into 3D. The team will be releasing a software development kit that enables game developers to convert their existing games into 3D versions.

The team is also exploring using the same technology for security access tokens to decode PIN numbers sent online as an inexpensive and portable alternative to rival bulkier and more expensive battery-operated security tokens, similar to those used by Singapore banks today.

"The team's expertise in both hardware and software development in 3D technology has enabled high quality 3D to be readily available to consumers," said Mr Frank Chan, the TP scientist who led the overall NRF-funded project. "We have taken age old lenticular lens technology that has been around for the last hundred years, modernised it and patented it using nanotechnology." Lenticular lens technology creates a transparent film that retains the brilliance of 3D visuals and effects, which does away with the need for stronger back lighting and saves on battery consumption in mobile devices.

"The successful development of this product is indeed testimony that we have been able to bridge the gap between R&D and commercialisation in the area of 3D interactive digital media (IDM), aided by the NRF Translational R&D Grant and gap funding from A\*STAR," said Mrs Lay-Tan Siok Lie, Deputy Principal of TP.

The two-year project was initially funded under a National Research Foundation (NRF) Translational R&D Grant in Dec 2010 to look at optimising the control of the nanostructures and integrating its effects with the complementary software applications. The team has since shifted its focus towards commercialisation with support from Exploit Technologies Pte Ltd (ETPL), A\*STAR's technology transfer arm and a one-stop resource that brings together home-grown technology, funding, collaboration and networks to assist A\*STAR spin-offs and start-ups.

"Our breakthrough is a game-changing piece of plastic that simply fits onto current smartphones or tablets to give users breathtaking 3D graphics on their smart devices. This removable plastic also opens up a multitude of opportunities for anyone wanting to create affordable premium 3D content and games for quick adoption to existing portable devices easily," said Nanoveu Pte Ltd Founder and CEO, Mr Alfred Chong. The start-up is licensing the technology exclusively from ETPL and TP, and is currently securing the interest of local and overseas

customers and investors.

"The success of this project is typical of what IMRE aims to do - innovate and turn science into an exciting business opportunity. I'm glad this has given us products that make life just a little bit more fun," said Prof Andy Hor, Executive Director of IMRE.

Provided by Agency for Science, Technology and Research (A\*STAR), Singapore

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