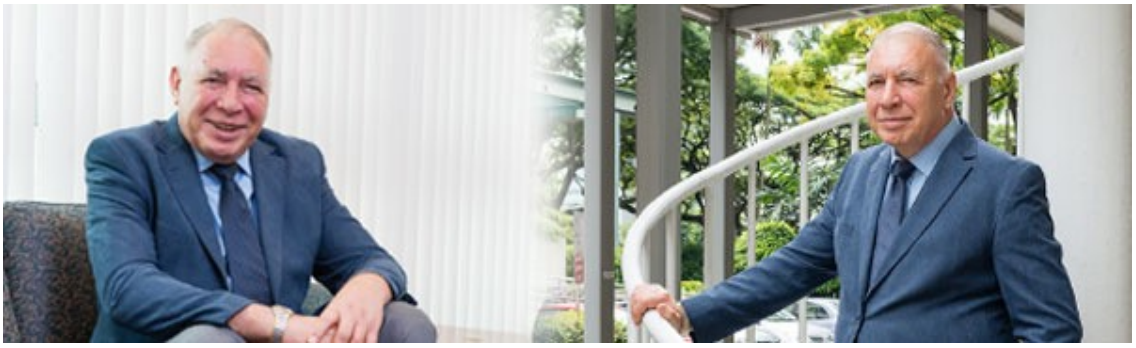
2013 PSTA WINNER CITATIONS

PRESIDENT'S SCIENCE AWARD 2013



Professor Boris Luk'yanchuk
Data Storage Institute Agency for Science, Technology and Research

"For his outstanding input to the theory of laser-matter interactions and light scattering by nanoparticles, in particular to Fano resonance in plasmonic materials"

The development of modern Data Storage Technologies depends on the achievements in nanoengineering and many fields of modern physics (nanomagnetics, nanophotonics, plasmonics, spintronics, etc.). Over the past 14 years, Professor Boris Luk'yanchuk has been working with different projects related to advanced concepts in Data Storage Technologies. Working in Data Storage Institute he published pioneering papers in the theory of laser-matter interactions, plasmonics and modern optics. Among the recent discoveries of Prof. Boris Luk'yanchuk and his group the following five achievements can be mentioned:

1) the creation of laser beam with longitudinally polarized light (Nature Photonics 2, 501 (2008));
2) pioneering investigation of Fano resonance in plasmonic materials and metamaterials (Nature Materials 9, 707 (2010));
3) nanoscopy with virtual image and superresolution (Nature Communications 2, 218 (2011));
4) Creation of "magnetic light" by laser induced magnetic moments in dielectric materials with high refractive index (Nature / Scientific Reports 2, 492 (2012)); 5) First realization of the Kerker`s resonance in optical range (directional light scattering by spherical silicon nanoparticles) (Nature Communications 4, 1527 (2013)).

Papers of Prof. Luk'yanchuk yielded high international reputation and citation, his paper on Fano resonance in plasmonic materials and metamaterials has the highest citation among the papers published for the last years by A*STAR Institutes.

Professor Boris Luk'yanchuk was awarded IES Prestigious Engineering Achievements Award 2004 (Team). He is a Honorary Professor of Johannes Kepler University, Linz, Austria and Fellow of the Optical Society of America. He was a Chair of a few International Conferences in Singapore, including Symposia of ICMAT Conferences. He is the topical Editor of "Journal of Optics" and the Editor of many Special Issued of Applied Physics A.

Professor Luk’yanchuk`s achievements also include novel discoveries in laser cleaning, laser thermochemistry, laser ablation, plasmonics, optics and photonics, and nanoscopy with virtual image. He investigated interference phenomena in the near field, and suggested combining "nano-Fano" with "nano-vortices" in nanostructures. This method permits to control a topological charge on a nanoscale. It has a promising application in future information technologies and quantum optics. For his outstanding input to the theory of laser-matter interactions and light scattering by nanoparticles, in particular to Fano resonance in plasmonic materials, Prof Boris Luk’yanchuk has been awarded the 2013 President’s Science Award.