

## Professor Sir John PENDRY

Citation

Today, we see Professor Sir John Pendry sitting with us on the stage. In the future being created by the transformational work of this eminent physicist, we may not. For that time, just around the corner, is not the WYSIWYG world of what you see is what you get. It is of flat lenses, light-bending materials, and yes, practical Harry Potter invisibility cloaks.

In his groundbreaking studies, Sir John has made a specialty of venturing into the previously impossible. From these intellectual travels, the Chair Professor of Solid State Physics at Imperial College London brings back radical new ways of viewing the world – or not viewing it in some cases.

Relishing the challenge of spotting the anomalies that escape the attention of the rest of us, he hurtles forward at a pace as fast as the light he studies, setting forth the ideas which hurdle the frontiers of currently accepted knowledge. It took him just a morning to arrive at one of his most breathtaking proposals — a “perfect” lens, unrestricted by the diffraction limit and capable of sub wavelength imaging. Everyone else believed it unattainable. Sir John showed otherwise in a brief but seminal paper published in 2000.

Indeed, during his 50-plus years at the forefront of physics, Sir John has dared to go where few have gone before in physics in a remarkably wide spectrum of ways. That he believes in

altering his research focus every 10 years or so has helped. Such an approach has taken him from developing the first computation techniques for low energy electron diffraction to the design of novel metamaterials. Excitingly, such materials provide access to properties not found in nature, opening up brave new realms that have never been scientifically explored before.

What makes Sir John’s ideas doubly exhilarating is that he not only produces a concept. He also works closely with experimental physicists to put his work into practice: “If you are going to have all this fun with science, you must make something of it,” he has said. In doing so, Sir John has transformed the world of physics. In addition, he has re-fired the public’s imagination about the significance of field, with the cloak of invisibility ironically providing a valuable spotlight for physics’ key role in development.

Perhaps a boyhood studying the gadgets of *Wireless World* magazine and bombarding his uncle – an electrical engineer – with innumerable questions played a part in this outlook. He went on to take a Bachelor’s degree in Physics and Master’s and PhD in Solid State Theory at Cambridge in the late 1960s. Following research positions at Cambridge, Bell Labs in the US, and Daresbury Laboratory in the UK, Sir John then joined Imperial College in London in 1981, where he remains to this day.

From his very first paper on the *Analytic Properties of Pseudopotentials* in 1968, he signaled the arrival of a truly original mind. It is a mind that has been generously shared over the years through collaborations, research teaching, and lectures given in his customary unceremonious style around the world. When invited to become an IAS Visiting Professor at HKUST, he accepted immediately, enabling our academics, researchers and Hong Kong to benefit more closely from his brilliance and wisdom since 2011. He recently spoke at the University's 25<sup>th</sup> anniversary celebration program in London.

Sir John's tremendous contribution has been recognized by a long-running list of prestigious awards and honors, including Fellowship of the Royal Society since 1984, a knighthood in 2004, the Isaac Newton Medal and Julius Springer Prize for Applied Physics in 2013, Kavli Prize in Nanoscience co-recipient in 2014 and the 2015 Prize for Fundamental Aspects of Quantum Electronics and Optics from the European Physical Society.

Equally telling, academics seldom have their talents individually celebrated in their own lifetime. Yet in 2008, the year of his 65<sup>th</sup> birthday, a two-day international "Pendry Fest" was held at Imperial College to honor his achievements. The same year, a whole issue of the *Journal of Physics: Condensed Matter* was dedicated to him, with articles by former students, colleagues, and friends. At HKUST today, we, too, are delighted to celebrate Sir John's genius, a beacon that lights the world on its way in trying to solve the grand challenges by showing the seemingly impossible is not in fact beyond us.

Mr Council Chairman, on behalf of the Council of the Hong Kong University of Science and Technology, I have the high honor of presenting to you, Professor Sir John Pendry, FRS, Chair Professor in Theoretical Solid State Physics at Imperial College, for the award of Doctor of Science *honoris causa*.