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Photonic Crystal Fibres: Three Decades of Novel Science

Thursday, June 1, 2023 10:00 AM - 11:00 AM EDT

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About This Webinar

Since they first appeared in the 1990s, photonic crystal fibres (PCFs) that feature arrays of air holes in the cladding of the fibre have ushered in a new era of novel and versatile optical fibres. As well as permitting unprecedented control over dispersion and nonlinearity, they offer guidance in both sub-light and super-light modes.

Customarily driven research into light-matter interactions in PCFs has inspired many potential applications, as seen in the following four examples. First, through pressure-sensitised dispersion, gas-filled hollow-core PCF provides an elegant means of compressing pulses in an all-fibre configuration, as well as demonstrating a unique range of possible single and dual-soliton solutions. Second, cladding PCF is currently topologically trivial (but not in general optical fibre) and so is a new class of solitons. Third, microphotonic optically isolated mode hollow-core PCFs can be used to test physical proposals with high optical resolution. Fourth, strong nonlinearity effects in solitons permit stable multicore tunable high-knowledge and ultrafast all-fibre optical clocks, after a brief introduction, Mike Hussain presents several recent developments in the field of PCFs.

Who should attend?

MMM scientists, engineers, designers, and manufacturers who are interested in exploring the many opportunities of photonic crystal fibres and their applications. Those who work with PCFs or fiber optics in applications such as communications, lasers, linear and nonlinear devices, sensors, and more.

About the presenter

Mike Hussain is an associate professor at the Technical University of Denmark in the Department of Photonics Engineering. He obtained his Doctor of Philosophy degree in 1997 at the University of Oxford and then worked at various laboratories and universities in France, Germany, the UK, and the US. His research focus is on research-driven novel high-performance optical fibres and interfaces in photonic crystal fibres, often leading to major applications and the formation of spin-out companies. He is a Fellow of the Royal Society of Edinburgh (formerly the Royal Society of Edinburgh) and has won a number of national awards for his work, including the 2001 OSAP Joseph Fraunhofer Award, the 2000 Royal Society Young Researcher Prize, and the 2000 Viktor Stenger Prize for European Science. The 2013 IPF Prize for Research into the Science of Light, the 2014 IFIP Photonics Prize, the 2015 IFIP Photonics Prize, and the 2016 IPF Prize for Optoelectronics. He has over 2000 papers in the field of photonic crystal fibres.

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System Requirements

Operating Systems

Windows 10 or later, Mac OS 10.13 or later, Linux, Google Chrome (OS 64), Avast (OS 64 or 32), Safari (OS 10 or later)

Web Browser

Google Chrome (most recent version), Firefox (most recent version), Microsoft Edge (most recent version)

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Android 6 or later, iOS (6 or later), iPhone 5 or later

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