

Photonic systems incorporating optical MEMS

Prof. Deepak Uttamchandani
University of Strathclyde

Abstract:

Optical MEMS is the fusion of photonics technologies with MEMS technologies, with the aim of generating optical systems which are more compact and lightweight, consume lower electrical power, are lower in cost or have some new optical functionalities. This talk will describe the development and performance of a number of discrete optical MEMS devices at the University of Strathclyde, and will go on to demonstrate their inclusion in typical optical systems, many of which will be familiar to the audience. Our prototype MEMS devices are fabricated at commercial MEMS foundries using multi-user processes, and our experience in working with commercial foundries for over a decade will also be covered.

Bio:

Deepak Uttamchandani is Professor of Microsystems Engineering at the Department of Electronic and Electrical Engineering, University of Strathclyde. He was awarded a PhD in 1985 from University College London where his research was in the field of frequency modulated semiconductor laser radar and their applications to optical sensor networks. In 1986, he joined the Department of Electronic and Electrical Engineering, University of Strathclyde as a Lecturer. His research interests were initially in optical and fibre-optic sensors and systems. Since the late 1980s he has grown research in the field of MEMS including techniques for the characterisation of micromechanical properties of MEMS materials; optically excited microresonator sensors; commercial-foundry-centred microfabrication of MEMS in polysilicon and silicon-on-insulator, MEMS design, excimer laser micromachining applications and radio-frequency (RF) MEMS. He has edited 2 books, guest-edited 2 journals and authored/co-authored around 200 publications.