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He obtained his Ph.D in Materials Science & Engineering from The Leeds University, United Kingdom, in 1997 and B.Eng and M.Eng from the South China University of Technology respectively in 1983 and 1986. His research interest has been in the areas of smart materials and composite structures and their applications in aerospace. His research experience also includes six years in National Key Laboratory in Powder Metallurgy (1986 to1992) in China and one and half year in the Manchester Material Science Center, UK.

He has received several key awards, including 2011 Canadian Space Agency Invention Award (2011), Canadian Space Agency Director's Award for Original Research (2006), British Overseas Student Award (UK, 1996), Tetley-Lupton Scholarship (UK, 1994-1996).

Smart materials and structures and their potential applications in UAV

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The materials and structures with their own mind and they are smart in a sense. This presentation will firstly give a brief overview of fundamentals of smart materials and structures, their definitions, origin of the concept, past and current applications in various technical domains, such as in automobiles, medical devices, robotics and aerospace subsystems. It will then discuss two key smart materials, the piezoelectric materials and shape memory alloy, their fundamental characteristics, operating modes and how to use them to design various types of linear and rotary actuators for potential applications in the mechanisms for control surfaces in unmanned Aerial Vehicle (UAV). Current researches along with case studies and future outlook will be presented.

Morphing wing design based using either piezoelectric materials or shape memory alloy as active elements will also be discussed.