Dr. Patanjali Kambhampati is a Full Professor in the Department of Chemistry at McGill University and is an internationally recognized expert on energetic materials and ultrafast laser science. He was born in India and emigrated to USA at age 4. He was educated in St Paul, MN, and graduated from Carleton College in 1992. He did his doctorate work at the University of Texas at Austin under the supervision of Alan Campion where he did ultrahigh vacuum surface science (1998). In his PDF at Texas with Paul Barbara, he learned the method of ultrafast spectroscopy and applied those methods to quantum dynamics in liquids (2001 – 2003). Following his PDF, he helped start up a $40M VC backed fiber optic company in Los Angeles (2001 – 2003)

He has generated nearly $8M in research funding since his appointment to McGill in 2003. He has published over 80 papers with over 7000 citations. He has delivered invited departmental colloquia in nearly 50 institutions including: MIT, Princeton, Columbia, Chicago, Northwestern. He has written nine invited review articles on the state of the field of quantum dots, one invited white paper on laser science, and has had seven primary articles publicized in the media. Kambhampati has been awarded the McGill University Fessenden Professorship as well as the Fessenden Prize (2012) for research innovation towards commercialization activities, followed by the Wares Prize (2019). He was awarded a Lady Davis Visiting Professorship at the Hebrew University in Jerusalem (2020). He was awarded the John Polanyi Prize by the Chemical Institute of Canada (2022) for lifetime achievement in the field of Physical Chemistry. Kambhampati has four US Patents. He has done R&D collaborations work with several corporations in Europe and North America: Fastlite (France), NN-Labs (USA), QD Vision (USA), Axis Photonique (Canada), few-cycle Inc. (Canada). One of his former students is an equivalent to Assistant Professor at Fritz Haber Institute (Berlin). Five of his former students went on to PDF at leading groups in ETH Zurich, Fritz Haber Berlin, Toronto, MIT, Illinois. Since 2005 he has supervised a highly intellectually diverse array of students from all over the globe, spanning Chemistry and Physics. 20 PhD students have joined the group to date, with each of the first 13 having graduated on schedule within five years.

His research has focused on the development and application of ultrafast laser spectroscopy to unraveling the behavior of materials for energetic applications. In 2006 his group developed State-Resolved Pump/Probe spectroscopy (SRPP), a variation on transient absorption (TA) spectroscopy but with simultaneous measurement of two TA spectra with different pump wavelengths, both at once. This ability enabled us to obtain state-to-state precision in evaluating the dynamics of charge carriers in semiconductor quantum dots (QD). His group applied this SRPP method to QD since 2006, and have created numerous breakthroughs with high profile papers in *Physical Review Letters* and *Nano Letters* and numerous invited review articles to place the work in a broad context. Since 2013 his group has done groundbreaking work to understand the nature of the surface of semiconductor nanocrystals (NC). NC are defined by their large surface area, yet their surface had been their most poorly understood aspect since their discovery in the 1980s. His group has produced the first and only microscopically rigorous theory of how to think about surfaces of NC. Since 2015, his group developed in a new ultrafast laser lab, two new instruments. We developed a new non-classical optics way to perform Two-Dimensional Electronic Spectroscopy (2DE). 2DE represents the current state-of-the-art in spectroscopy. Rather than merely follow the lead of other world experts, we developed our own solution which is among the most powerful 2DE spectrometers in the world. This 2DE instrument has already produced breakthrough results in *Nature Communications* and *Proceedings of National Academy of Sciences*. In 2019 his group has embarked upon a totally new research direction, focusing on semiconductor perovskites after 15 years of work on semiconductor QD. In QD the basic science came down to excitons and in perovskites the basic science comes down to polarons – different physics. In our first three papers in one year, we have done groundbreaking work on dynamics of charges and lattices in perovskites