

Professor Pavel Matousek

Laser expert at the Rutherford Appleton Laboratory, and founding director of Cobalt Light Systems Ltd



Pavel Matousek's IMP helped him to set up a spin-out company to commercialise laser scanning technologies that can detect liquid explosives, rapidly check the quality of pharmaceutical products and diagnose breast cancer non-invasively.

I obtained my MSc and PhD degrees in physics from the Czech Technical University in Prague, the latter in partnership with the STFC Rutherford Appleton Laboratory, where I have worked on laser physics at the Central Laser Facility for over 22 years. I specialise in Raman Spectroscopy, which uses lasers to analyse the chemical composition of materials.

I have pioneered a number of new techniques, including the concept of Spatially Offset Raman Spectroscopy (SORS), which I have developed for a wide range of applications. This technique can probe deeper into materials, allowing the contents of glass or plastic bottles to be analysed without opening the container. I have filed 10 patents, received a number of awards and co-edited a book on Raman spectroscopy.

IMP is an excellent and forward-looking scheme. It allows recipients to focus on scientific goals at the prime of their scientific career, without being overwhelmed by administrative and operational duties. The existence of the scheme was for me of paramount importance. It enabled me to capitalise on my earlier scientific advances, using Raman spectroscopy to retrieve chemical information from within powders, gels and biological tissue.

Some tangible benefits of my past IM research are already emerging. Several concepts developed in the past have now been commercialised through our spinout company, Cobalt Light Systems Ltd. The company developed unique scanners to detect liquid explosives in bottles for airport security, and scanners that can assess the chemical composition and uniformity of pharmaceutical products such as tablets or powders in just a few seconds.

I look forward to the next phase of my IM research enabling me to further develop these concepts and apply them, in partnership with my collaborators, across a wide range of disciplines including healthcare. We hope to address important societal issues such as the non-invasive diagnosis of breast and prostate cancer and bone disease.



Insight100 (Cobalt Lights Systems Ltd) scanner for noninvasive analysis of bottles at airports.