

Bridging research with innovative products: Specim IQ - a compact, portable VNIR hyperspectral imaging camera

Ben Parker ^{1}, Ana Aranda ², Jouni Jussila ²*

¹ Quantum Design UK and Ireland Ltd, 1 Mole Business Park, Leatherhead, Surrey KT22 7BA, United Kingdom

² SPECIM Spectral Imaging Ltd, Elektriikkatie 13, FI-90590 Oulu, Finland

*Corresponding author: ben@qd-uki.co.uk; +44 (0)1372 378822

Due to the complexity and bulkiness of current instrumentation, it has previously been highly difficult to make hyperspectral measurements at the location where the actual samples are. Additionally, demanding off-line data processing has prevented users in obtaining immediate results for decision making and actions at the site of the measurement.

To solve these issues SPECIM (Spectral Imaging Ltd) has introduced a compact, portable hyperspectral camera operating in the 400-1000 nm (VNIR) spectral range. Based on a spectrometer with push-broom technology, this new mobile camera collects 10-20 times more light from the target than filter based cameras. This results in a higher signal-to-noise-ratio (SNR) and/or quicker image acquisition in similar illumination conditions. In addition to the portability, the camera has integrated data processing capability and an intuitive, easy to use graphical user interface. For the first time, pre-defined applications can be uploaded to the camera to enable real-time advanced data analysis (such as on-board false colour classification) at the push of a button. The applications steer the operation of the camera (data acquisition) and data processing to match the requirements of the user. The off-line software included with the camera (IQ studio) is used to generate the applications (and associated models) without the need for extensive and time-consuming programming in a 3rd party software package.

The Specim IQ camera is a ready-to-go hyperspectral imager already adopted by a wide variety of market sectors - such as agriculture, food safety, forensics, colour measurement and cultural heritage – facilitating the development of application-led solutions to their end users. Similarly, researchers and professionals in several other emerging application fields can quickly adopt the camera to their everyday work.