

Press Release

Cutest Invests in Labsphere's Latest UV-2000S Sunscreen Analyser



March 10th 2009: Pro-Lite Technology LLP (Cranfield, England) has won a contract to supply a Labsphere UV-2000S sunscreen analyser to Cutest Systems Ltd (Cardiff, Wales). The decision to invest in the UV-2000S means that Cutest has become the first, independent British laboratory to possess the tools necessary to provide contract measurements that fully comply with the latest COLIPA (the European cosmetics industry trade association) sunscreen testing guidelines. Cutest is a leading specialist in the fields of safety and efficacy testing of cosmetics and skin pharmaceuticals and provides a fast service to the British and wider European sun care industry with cost-effective, contract testing services for new sunscreen formulations.

Labsphere's UV-2000S fully complies with all current and proposed industry standards, including the COLIPA 2007 UVAPF method, the 2008 update to the Boots Star Rating system and also the proposed United States FDA protocol. The UV-2000S remains the only affordable and simple-to-use instrument to fully satisfy the requirements of the COLIPA guidelines. The UV-2000S builds upon the success of the previous UV-1000S by providing a much greater degree of absorption sensitivity to support the development of high factor sunscreens (2.7 absorbance units specified, 3.0 achieved typical), a convenient sample positioning stage and dedicated software that simplifies the measurements and automatically calculates the various performance parameters required in the COLIPA and Boots Star methods.

The performance of sunscreens has taken on an ever greater importance in recent years as a result of increasing health concerns arising from excessive exposure to sunlight. Sunscreen manufacturers have focussed on developing new and improved formulations that provide the necessary high levels of protection as well as photo-stability.

The performance testing of sunscreens was originally performed on human volunteers. This "in-vivo" test involved the determination of the SPF (sun protection factor) based upon the delay in the onset of erythema (sun burn) on protected versus unprotected skin. Supplementary, predictive ("in-vitro") SPF testing was developed in the early 1990s based upon the measurement of the spectral absorbance of sunscreen applied to a transparent substrate material (originally Transpore Tape, more recently roughened plates of polymethyl methacrylate – PMMA). Labsphere developed its original sunscreen analyser – the UV-1000S

– in the mid 1990's in order to provide sunscreen formulators with an affordable tool that helped them to bring new formulations to market more quickly and at reduced cost.

It is important to understand that SPF relates mainly to the protection that the sunscreen affords in the UVB part of the spectrum (290-320nm). It says little about protection in the UVA band (320-400nm). Our understanding of the damage sunlight can cause to our skins has developed and it is now accepted that in the long term UVA as well as UVB is potentially damaging. Clearly, a method to measure the protection provided by sunscreens in the UVA region was required.

Various parameters were developed to indicate the degree of broad-band protection given by a sunscreen. Critical wavelength was one such metric, being the shortest wavelength at which the sunscreen absorbed 90% of the sun's energy. If the critical wavelength was 370nm or greater, the formulation could be described as having broad spectrum protection. Here in the UK, Boots developed its Star Rating system that awarded one to four (subsequently up to five) stars depending upon the ratio of mean UVA to UVB absorbance. The higher the UVA absorption, the higher the ratio, the greater the number of stars a product would earn. Elsewhere, researchers developed an in-vivo method for UVA protection based upon the observable end-point of persistent pigment darkening (PPD).

In 2007, the European Cosmetic Industry Association (COLIPA) published its new UVA protection factor (UVAPF) test method that defined a relatively easily performed, in-vitro test based upon a spectral transmittance measurement scaled to the PPD action spectrum. This test method is essentially the same as that used to perform in-vitro SPF testing, but with some important differences. First, the sunscreen must maintain its protection after exposure to sunlight. The photo-stability of the formulation would be determined by measuring the absorbance before and after exposure to a solar simulator. Second, the action spectrum invoked in the calculations is that for PPD rather than erythema. Third, COLIPA required that the spectrophotometer used for the tests should possess a much higher degree of sensitivity in order to accurately report the ratio of UVB to UVA absorbance and to cope with higher protection factor formulations.

It was this last requirement that proved to be the stumbling block for the continued use of the original Labsphere UV-1000S sunscreen analyser. COLIPA required that the machine be capable of measuring down to 2.3 absorbance units at all wavelengths in the 290-400nm band. This was beyond the capability of the original UV-1000S. More worrying still, the only other instrument on the market also failed to comply with COLIPA requirements. A new instrument was required, and required quickly if sunscreen manufacturers were to be able to release products that complied with the new COLIPA requirements. This became the UV-2000S which was released to critical acclaim in summer 2008.

Web link: http://www.pro-lite.co.uk/File/case_study_sunscreen_testing.php

About Pro-Lite: Pro-Lite is a specialist distributor providing value-added service to the laser and optical radiation measurement communities in the UK and Ireland. Pro-Lite supplies lasers, laser safety eyewear, laser power and energy meters, precision opto-mechanics, as well as a complete spectrum of equipment for measuring optical radiation and the optical properties of materials.

FOR FURTHER INFORMATION:

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