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Protection and Promotion World

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Brand[©] is published 10 times a year. Each issue includes consultancy-level articles that provide independent analysis and exclusive primary market data on a variety of disruptive, emerging technologies that are gradually being incorporated by the world's leading brands. Each issue provides reporting of latest material and product launches, trials and breakthroughs.

DNA authentication for New Zealand carpets

Elders Primary Wool New Zealand is using a new tracking technology to guarantee the sale of New Zealand wool carpet to a large US furnishings retailer.

Elders has an exclusive licence to use textile tracking technology

called VerifiTT, sold by VTT Marketing, to guarantee its product for sale at CCA Global Partners in the US, which is one of the world's largest carpet retailers.

The tracking technology will provide validation of wool sourced exclusively

from New Zealand in Elders's new Just Shorn range used to make carpets and rugs produced for sale in North America, says VTT marketing executive director John Pettengill. 'VerifiTT deploys a unique invisible marker incorporated early in the carpet manufacturing process, at scouring.'

The marker can only be determined using a handheld electronic scanner that provides an instant read out of code allocated exclusively to Elders for use in carpet.

He says CCA Global partners is using VerifiTT to differentiate Just Shorn wool and guarantee the authenticity, and therefore quality of the New Zealand sourced wool, and will display point of sale information highlighting the associated benefits of using natural, renewable New Zealand crossbred wool.

VerifiTT uses technology developed jointly by scientists at Commonwealth Scientific Industrial Research Organisation (CSIRO), which is Australia's largest applied research network, together with the specialist textile centre within AgResearch, a New Zealand government-sponsored agricultural research organisation.

'The technology has been commercialised by

DataTrace DNA of Sydney in a joint venture company with CSIRO,' explains Pettengill.

VTT Marketing, an Auckland-domiciled company, has acquired exclusive worldwide rights to distribute and market the technology to the textile industry.

Elders's take up of the technology represents the first sale and trials are underway with a number of leading global brands considering using VerifiTT to enhance and/or replace current counterfeiting measures.

VTT also provides an option to integrate tracking products using VerifiTT with an overarching link to a cloud-based system. This enables the tracking of related consignments where VerifiTT is added before garment production.

Pettengill claims VerifiTT provides a unique and extremely high level security solution to prevent counterfeiting and fraudulent use of branded fashion products incorporating textiles and sewing yarns in garments, footwear, bags and related products.

Details of the technology are closely held and VTT Marketing has set in place strict protocols to ensure the technology is protected.

Sustainable New Zealand wool guarantee



Source: <http://www.verifitt.com/>

Sony develops unique codes for mass-produced holograms

Sony Disc and Digital Solutions (SDAD) has developed a mass-production process to make holograms harder to copy through individual identification codes.

SDAD, a division of the Japanese consumer electronics brand, will use masterforms of holograms which are made by holographic stereogram technology with digital image processing capable of recording multiple images onto a single hologram sheet.

Aside from the opportunity to add up to 21 encrypted digits in a single hologram, SDAD's new technology will

also allow 3-D computer graphics and moving animation. This, according to a Sony source, could be used for advertising and marketing in addition to providing a secure anti-counterfeiting solution.

By displaying 3-D motion pictures horizontally and numerical codes vertically, the source insists the unique holograms are extremely difficult to replicate and so offer the highest level of security for anti-counterfeit measures.

Sony plans to use the uniquely coded holograms as authentication stickers for its consumer electronics and in May 2010 delivered sample holograms to other product manufacturers.

SDAD also foresees launching a new authentication server

via the internet, for customer relationship management (CRM) and track-and-trace services off the back of the individually assigned codes on the holograms.

SDAD is a disc and digital solution provider for the entertainment, education and IT industries.

New interactive anti-counterfeit solution

NTERA, a Philadelphia-headquartered developer of advanced, printable electrochromic materials, is market testing its specialist inks in Europe with the aim of supplying its technology as part of smart packaging applications that could enhance product security.

Electrochromic materials show a reversible colour change when a small DC voltage is applied, enabling display and colour change applications for smart cards, smart packaging and smart objects.

Chris Giacomponello, NTERA VP business development and marketing, says the Dublin University spin-off is receiving a lot of interest and is undergoing development projects with several large consumer products and packaging companies.

As NTERA's technology is electronically controllable, Giacomponello says it is possible to couple the output of sensors to either drive the display, or an intelligent controller, which then drives

the display to support tamper-proof systems.

NTERA's technology can be classified as a controllable optically variable device (OVD), so it can support both covert and overt visual detection.

NanoChromics's ink systems enable cost effective manufacturing of printed electronic displays on a variety of flexible substrate materials using industry standard printing techniques and equipment.

Says Giacomponello: 'What is missing today is an authentication solution that brands can promote to consumers. Holograms certainly have lost capability – they are ubiquitous and indistinguishable. Brands and packaging solutions are looking for a novel, recognisable, yet difficult to counterfeit, solution. We believe that our technology may fit that bill.'

NanoChromics's smart labels are also interactive. 'It will be possible to customise them on a product-by-product basis, perhaps even an item by item basis,' continues Giacomponello.

Validation, by either consumer or brand owner is possible with handheld (mobile) devices.

Cotton authentication test rolls out

Applied DNA Sciences (APDN) recently launched FiberTyping, the first DNA authentication test to verify

Unique holograms provide greater security

Sony Disc & Digital Solutions Inc.



PRODUCT CODE. AS000597-320

QLOP126
XYN7H54



Sony Disc & Digital Solutions Inc.



PRODUCT CODE. AS000597-320

QLOP126
XYN7H54



Source: <http://www.sonydad.com>

FiberTyping provides authentication from cotton grower to end consumer


Source: <http://www.adnas.com/>

content of cotton in fibre and textiles worldwide.

The test has been developed in collaboration with Supima, a non-profit organisation, which promotes textile and apparel products made of 100% American Pima cotton.

FiberTyping tests for the presence of *G.barbadense* (the genetic marker for extra long staple cotton like Supima) and/or *G. hirsutum* (upland cotton) before the cotton is processed.

'While Supima has collaborated with us on the initial roll-out of FiberTyping and we appreciate its support in advancing the using of FiberTyping to its licensees worldwide, Fibertyping testing is available to anyone interested in verifying the content of cotton in fibres and textiles,' says Dr James Hayward, CEO of APDN.

Hayward reveals FiberTyping is being used by yarn manufacturers and various suppliers around the world: in China, India, Hong Kong and the US, to confirm the cotton content is present in the product before it becomes a finished item of merchandise.

'Another advantage of FiberTyping the greige (unbleached, undyed and unfinished) yarn or fabric is that it assures the retailer that the finished product is compliant with label regulations (as per the Textile Act and Federal Trade Commission regulations),' states Hayward.

He insists, furthermore, the steps to get cotton DNA tested are easy and cost effective. 'The customer contacts us and sends us one yard of greige yarn or fabric samples. Depending on the need, we can complete the testing within

3 days (expedited service) for \$1,000 per sample, or 7 to 10 business days (regular service), for \$500 per sample.'

A FiberTyping DNA Authentication Report is provided for each sample tested, while clients who require high volume testing are recommend to contact APDN to make arrangements for volume pricing and testing.

EFPIA calls for EU-wide harmonised coding system

The voice of the European pharmaceutical industry is advising that a standardised interoperable coding system be introduced across the EU.

This is following the publication of the European Federation of Pharmaceutical Industries and Associations' (EFPIA) final report on a

serialisation pilot in April.

The pilot project scanned and verified almost 100,000 packs in 25 pharmacies across Stockholm, at the time of dispensing, in collaboration with pharmaceutical retail chain Apoteket AB. The report concluded that authentication at the point of dispense was viable, robust and effective.

'We are obviously pleased at the outcomes of the EFPIA pilot project, which demonstrated that a solution based on an end-to-end approach is feasible. The use of a 2-D data matrix is a practical, proportionate and affordable approach to mass serialisation of medicines,' remarks Colin Mackay, EFPIA's director of communication and partnerships. 'The pilot has gone a long way to proving that this technology is not only workable, but is acceptable throughout the supply

EFPIA calls for standardised interoperable coding across EU


Source: www.efpia.org

chain and does not slow the pharmacists' work flow.'

Mackay insists, however, it is only part of the solution: 'For mass serialisation to be part of an effective solution in preventing counterfeiting, it needs other measures to be put in place. First and foremost coding systems need to be harmonised and interoperable across EU Member States.

'Prescription medicines cross borders in substantial numbers; it is therefore vital that the ability to verify a pack's provenance does not stop at the national border,' he continues. 'EFPIA will seek to demonstrate the benefits of the end-to-end, 2-D data matrix approach to national governments and urge policymakers to adopt harmonised and interoperable standards as soon as is practicable.'

RFID wristbands to rock UK festival

UK concert promoter Live Nation is rumoured to be trialling RFID-chip enabled wristbands instead of tickets at the Download rock festival at Donington Park in the UK in June.

Live Nation chief operations officer John Probyn says paper tickets are the weakest link and the appeal of putting RFID chips in wristbands is to make them non-transferable, thereby stopping them from being resold. He hints that Live Nation will be testing

RFID wristbands at several large music festivals. Live Nation has previously trialled RFID at smaller music events but is keen to get rid of paper tickets.

According to latest figures issued by the UK government, one in 12 music fans have been scammed online when they've bought tickets for live events.

Probyn says each wristband will be personalised, so that only the person whose name is in the chip can gain entrance. 'If Fred Bloggs comes in, I can ask him for identification to prove he is that person,' reveals Probyn

'It's the same ring of people that are behind this,' he continues. 'It's big money for them. Every single wristband, every single ticket is worth an awful lot of money on the open market.'

Smart wristbands could also enable people to buy goods with them. 'This is something I've been working on for three years now. It started as a payment system so that, rather than trudging around a festival with a load of cash in your pocket, you could buy your burgers and beer with a little chip on your wristband,' continues Probyn.

Additionally, sponsors could communicate with music fans to advertise new events and products.

Security for syringes and vial caps

NanoGuardian reveals a rise in interest from both pharmaceutical and biotech

manufacturers about using its NanoEncryption technology to protect pre-filled syringes and vial caps.

The division of NanoInk focuses on providing brand protection solutions for pharmaceutical manufacturers.

'NanoGuardian expects to have at least one product using these delivery systems and being protected by NanoEncryption in the marketplace within the next 12 months,' says Dean Hart, executive VP of NanoGuardian.

He adds: 'Given that it certainly appears that counterfeiting, illegal diversion, and cargo thefts are not slowing down, we expect to see a fairly rapid growth in the number of manufacturers, products and individual doses being protected with NanoGuardian's NanoEncryption technology.'

NanoGuardian's ability to NanoEncrypt pre-filled syringes and single-use vial caps was perfected in 2009,

and the decision to more overtly market the technology's potential for protecting these treatment formats follows a recent agreement with Capsugel, a division of Pfizer, for the protection of capsule-based medications.

To explain the technology Hart says NanoGuardian has perfected a way to make purposeful manipulations in the coatings of tablets, gelatin of capsules, and core material of the single-use cap and/or syringe resulting in the placement of several security features that are overt, covert, and forensic in nature.

The NanoCodes are at the deepest, forensic level given their nanoscale size. These intrinsic, layered security features help manufacturers protect their brands, companies and patients against both counterfeiting and illegal diversion.

NanoEncryption provide several security features without altering medication



Source: <http://www.nanoguardian.net/>

Cosmetics, fragrance and personal care have long been target markets for counterfeiting and diversion, posing risks to the health of consumers and the reputations of brand owners.

Brand investigates

Enhancement vs protection

The cosmetic packaging market alone is estimated at \$13 billion (€11 billion) and counterfeit products are estimated to account for around 10% of the global cosmetics and toiletries market.

With an armoury of printing technologies – including colour-shifting inks, specialty varnishes and coatings, holograms and advanced printing processes – at its disposal, the challenge for the industry is to come up with secure products, with shelf appeal as a given.

Brand owners are taking the opportunity to add unique tactile or sensory elements to help cosmetic and personal care products stand out on the shelves. Pangea Organics's soap bar wrappers, for example, are embedded with seeds, such as amaranth, which can then be planted. Quality Assured Label, meanwhile, has created a patterned tactile varnish for Village Naturals Bubble Bath, while Transparent Packaging has developed packaging which can be made to smell like the product inside. All of these are for brand enhancement but offer some security due to their uniqueness.

Joanne Ogden, sales manager at API Holographics, says customers come to the company with a particular mindset and either want brand enhancement or brand protection. 'We can offer both,' she explains. 'In terms of brand protection, yes, we want to protect the brand, but we don't want it to look ugly so we do have to consider both.'

But there are clients who say they don't want any security features and they do treat it purely as enhancement rather than protection, but the sheer fact you add a unique design and print it in such a way, makes it difficult to copy.'

She cites Proctor & Gamble's Herbal Essences hair products, which include a lime green hologram provided by API, as an example. 'Holograms are not just silver, there is so much you can do with colour,' insists Ogden. 'It can work in conjunction with the ink and the whole concept works better with ink.'

API also works with perfume houses Lancôme, Escada and others. While both are solely interested in shelf appeal Ogden claims they could so easily do both. The red holographic box packaging for Lancôme's Magnifique perfume, for example, would be very difficult to copy.

Ogden says most people think of holograms as a single hologram, so her first job is to explain how they can also be incorporated within packaging. 'It works best when we are at the initial conceptual and artwork conversations as API is not just a security solutions company, we are a global packaging company, so we understand the effect on packaging and can consider packaging as a concept rather than the hologram looking like an afterthought.'

In terms of security features, Ogden believes no other solution can operate in all three levels at the same time. 'Many can be covert

With an armoury of printing technologies – including colour-shifting inks and holograms – at its disposal, the challenge for the industry is to come up with secure products, with shelf appeal as a given

and forensic or be overt and covert, but only holograms can incorporate all three within a single security image.'

'When clients talk about brand application I always ask who their policeman is. There's no point throwing in a 5-micron nano-text if the consumer is the verifier,' she explains. 'Overt features suit consumer verification, but we also include at least one covert feature for the benefit of the brand owner. It can be hidden text or hidden screen reveal type images.' API also supplies 'nano maps'. These are single dots where a map of country or province can be hidden.

Overt security features, such as holograms, foil printing and speciality inks can be used on their own but are most likely combined with more covert security features.

Jim Reiman, director of sales for Sun Chemical's brand protection business, insists that while overt security features may provide comfort for consumers; they should not be the only security technology. 'Consumers are terrible discerners of what's authentic or isn't,' he insists, 'to rely on them to make that call is very dangerous because they are bad at it.'

Additionally, the more overt something is, the easier it is to either copy or mimic. Both Reiman and Ogden recommend that cosmetic manufacturers don't rely on any one technology. 'They should adopt different layered solutions, with several overt and covert ones mixed in different graphics or parts of the package,' suggests Reiman, 'put one on the inside, one on the outside or even on the product itself.'

'We have lot of packaging and technology expertise,' he continues, 'so can take different technologies and combine them into a single ink or varnish.'

Verigard is Sun Chemical's highest security offering. It is an infrared machine-readable taggant reader system. 'It's completely covert,' explains Reiman. 'No special print technique is required as we tag an ink, varnish or the adhesives that we supply anyway to the printer and it is detectable in the field using our



Figure 1

Colourful holograms are becoming ever more popular

Source: www.apigroup.com

proprietary reader, using a simple pass or fail system.'

The taggant is used by primary cosmetics packaging and also on some secondary packaging, along with hidden image technology (HIT). 'HIT is very popular in the cosmetics sector,' reveals Reiman. 'Hidden images, using proprietary software get embedded in original artwork when the printer prints packaging and embedded HIT is revealed with inexpensive plastic lenses or digitally, with proprietary digital cameras or smart phones.'

Like Verigard, 'HIT doesn't require special inks or print techniques and another real advantage is you can do custom messaging with a logo, the word 'genuine' or say anything at all.'

Several messages can be embedded, adds Reiman. 'Just look at a varnished area on a package with no apparent graphics, put a lens on it at 90 degrees to reveal one image and turn it another 90 degrees to reveal another image.'

The Kodak Traceless system, which also uses invisible markers embedded into the product or packaging during the manufacturing or printing process, is also popular in the

Figure 2

Holograms provide enhancement and security
 Source: www.apigroup.com



cosmetics sector. Products can be verified as genuine through the use of a handheld Traceless system scanner.

German sensor manufacturer Sick, meanwhile, has teamed up with ink manufacturers, to develop individual luminophore (atoms or atomic groupings in a chemical compound which create luminescence) mixes for clients, while pigment-specific devices identify specific wavelengths within ink formulation.

Sick product manager Simone Klausmann counts cosmetics houses as clients for the new security system 'which can be used in a range

Figure 3

Readers ID taggants mixed into standard inks, varnishes, coatings and adhesives
 Source: www.sunchemical.com



of paper products – from both packaging and labels’.

An unnamed perfume house is evaluating another new security system called Identicate developed by global graphic and specialty papers and boards producer Sappi.

Invisible Identicate marker particles are randomly distributed on the surface of Sappi’s packaging materials, providing a unique 128-2000 bit encrypted fingerprint which can be read by scanners and provide both authentication and supply chain information.

One of the major benefits of using security papers in packaging is that they are very difficult to counterfeit. ‘For a start, they would need to have a paper machine, which is a huge investment,’ explains Verschueren, ‘then there is the technology itself which is very difficult to copy.’

‘Secondly, it’s on existing products which do not need to be modified. Users can continue using standard packaging, there is no need to change converting as the security feature is incorporated from the beginning, making it less costly, and fewer partners increases the security.’

French authentication specialists Prooftag says a number of cosmetic companies are using its unique, chaotic self-generation bubbles within a transparent polymer technology, called Bubble Tag, as a way to counter diversion problems. Each random, self-generated Bubble Tag is recorded in an independent reference database, creating a unitary certificate of authenticity. The certificates are accessible and controllable by anyone authorised to monitor the authenticity of a product at any point in the distribution chain.

Compatriot specialty chemical company Rhodia, is also providing a high-tech solution to a cosmetic counterfeit problem. Rhodia contacted Applied DNA Sciences to add its SignatureDna encryption technology to the Jaguar range of Guar products, which are used in hair and body beauty products.

Rhodia’s patented Jaguar range is derived

from quaternised Guar Gum, extracted from the seeds of the guar beans, which Rhodia sources from southern Asia, controlling each stage of the extraction and processing to assure consistent quality. It chose to forensically guarantee the authenticity of its Jaguar range of products to ensure no counterfeited ingredients are substituted for less expensive and/or toxic ones.

Reiman says there is a trend within the cosmetics industry for security solutions to be added to the primary packaging or even to the product itself. Sun Chemical offers a forensic product testing solution called SunScreen. 'Anything that's soluble can be tested, anywhere in world in 10 minutes. There's no need for laboratory analytics as it's a screening technique and provides a great first line test.'

Both Reiman and Ogden agree that mass-market brands, who are competing more, tend to favour enhancement and shelf appeal, whereas high-end brands won't always admit they have a counterfeit problem. 'High-end brands are less likely to admit it, and less likely to publicise it, nor want their consumers to even wonder if a product is counterfeited,' explains Reiman, who believes this is a mindset across all high-end fashion markets, be they cosmetics, clothing, shoes or watches.

'It doesn't mean they are any less counterfeited but they are very difficult to penetrate for any solutions and technology providers such as us. We don't talk their language,' he continues, adding that high-end fashion is the antithesis of a big corporation like Sun Chemical.

So to help it penetrate high-end fashion Sun Chemical formed a partnership with a company connected to those markets, called Aequitaz. Made up of former staff of brands such as Louis Vuitton, Reiman says: 'They know these people and speak their language and we see enormous benefit from this and hope to gain entry into the high-end fashion sectors.'

Whether it's high-end or high-street cosmetics, however, brand owners ignore counterfeiting at their peril. Reiman says some cosmetics



Figure 4

SunScreen - a taggant-free direct testing system

Source: www.sunchemical.com

companies are just willing to live with a counterfeit problem, as they think the act of fixing it as much more cumbersome and troubled than paying to fix it and adopting a programme.

The reality, he concludes is that 'if a brand is losing US\$5 million per year and someone is impeding their good name and they have to spend 10% of that figure to fix the problem, then it's a no-brainer.' ■

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