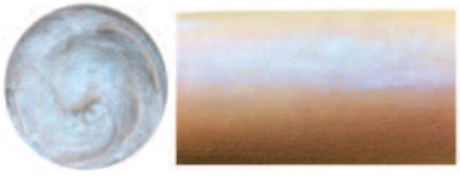
# CAPTIVATING VIA ENCAPSULATION

Products that change colour and texture help communicate active ingredient efficacy to the consumer while providing 'wow' factor. **Danny Goldstein**, **Shaher Duchi** and **Jessie Reder** discuss a technology from Tagra that brings controlled colour release to a diverse range of formula types

A skin care routine is no longer 'routine' at all. It is a relationship; a conversation between the consumer and their selected brands. Consumers engage with multiple facets of a formula – its clinical results, as a visual experience to share on social media, the use of ingredients with a sensitivity to global ecosystems and even whether or not it has a low carbon footprint impact during production. And consumer engagement is key to traction in the cosmetics market.

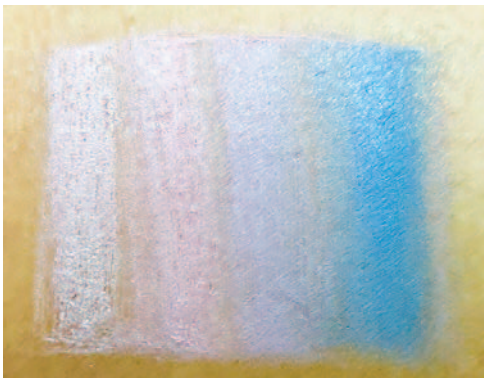
**Figure 1**
Holographic balm with CameleonCaps Red, Yellow, and Brown can be applied as a highlighter, or massaged into a contour cream



An easy way to engage consumers is through formulas that change colour and texture.

As an innovative company and a leader in microencapsulation technology, Tagra was

**Figure 2**
The in-cosmetics 2019 Make Up Bar Silver winning formula, Unicorn Lips, contains CameleonCaps PtW (Pink-to-White), Red30 and Blue, and changes from a retro pink to an edgy blue



Besides the existing colour range (below), Tagra can customise specific microcapsules based on customer needs



among the first companies to introduce the concept of encapsulated pigments for colour changing effect to the cosmetics industry.

Consumers gravitate toward transformative formulas as indicators that something is indeed happening while using the product, and to ensure they are paying for a product that truly works. This concept also serves as a marketing tool to illustrate the release of active ingredients from other Tagra microcapsules in the formula, such as actives and vitamins.

In addition to acting as a communication tool with the consumer, pigments encapsulations allow skin care companies to easily convert skin care into colour cosmetics and unite the two in a single product. Actives can be used in pressed powders and colour can be easily added to lightweight serums.

## CAMELEONCAPS: WHAT ARE THE BENEFITS?

When formulating with Tagra's encapsulated pigments, companies do not need to invest in a dedicated production line for colour cosmetics. Rather, the capsules are added to the last stage of formulation preparation by gradually adding the capsules with a simple paddle mixer.

There is no need to treat or handle the pigment (grinding, preparing a stable dispersion of it) and the encapsulation of pigments significantly reduces cleaning maintenance efforts.

Processing, cleaning and colour matching all move much faster than in normal colour production, which equates to substantial cost savings.

Tagra's CameleonCaps bring controlled colour release to any formula, playing a vital role in the creation of stable and successful formulas.

The CameleonCaps can be incorporated into any type of cosmetic preparation: creams (oil-in-water and water-in-oil), lotions, silicone-based formulations, water gels, lipsticks and even pressed powders. With a cellulose-based polymeric shell, which is extracted from wood pulp, this microencapsulation technology can be used for vegan and derived-natural claims, as per ISO 16128.

The visual and sensorial shifts can indicate the release of an active material, or a directed usage time, such as massaging in a face mask until the secondary colour has been fully distributed. The surprising moment when a formula changes colour creates a 'wow' effect, delighting and satisfying the consumer applying the formula.

Dual application cosmetics speak to the customisation trend, and give consumers control over the application – one product acting as both a contouring cream and a highlighter, for example.

A popular trend is colour changing make-up based on the pH of the skin. However, these colour transitions are limited, with the final shade ranging only from pinks to reds. Thus, the controlled application of CameleonCaps brings precision and next-level technology to many formulation types.

**Pigments encapsulations allow skin care companies to easily convert skin care into colour cosmetics and unite the two in a single product**

## COLOURFUL CREATIONS

Within the CameleonCaps family you can find the following colors: Yellow, Red, Black, Blue, Green, Red30, Brown, White and Pink-to-White, where the outer shell gives formulas a pink mass tone, but converts to a bright white, which is popular in Asian markets.

Tagra has recently released Cameleon Gold, an encapsulated mica that keeps the original mass tone of a formula, but releases a flawless perfecting highlight upon application.

Besides the existing colour range, Tagra can customise specific microcapsules based on customer needs. For example, the outer polymeric shell can be composed of a range of colours, providing a colour to the mass tone.

For companies that want to simplify colour production, Tagra offers shade matching and customised blends. Additionally, larger size capsules can be made, which give a visual effect in transparent base formulations, such as a simple water gels.

And then, for formulators who may be less familiar with the creation of colour cosmetics, Tagra has created a shade guide (figure 3), with ready-made basic colour ratios (red, yellow and black).

**Figure 3**

Tagra's easy-to-use shade chart helps convert skin care to colour cosmetics

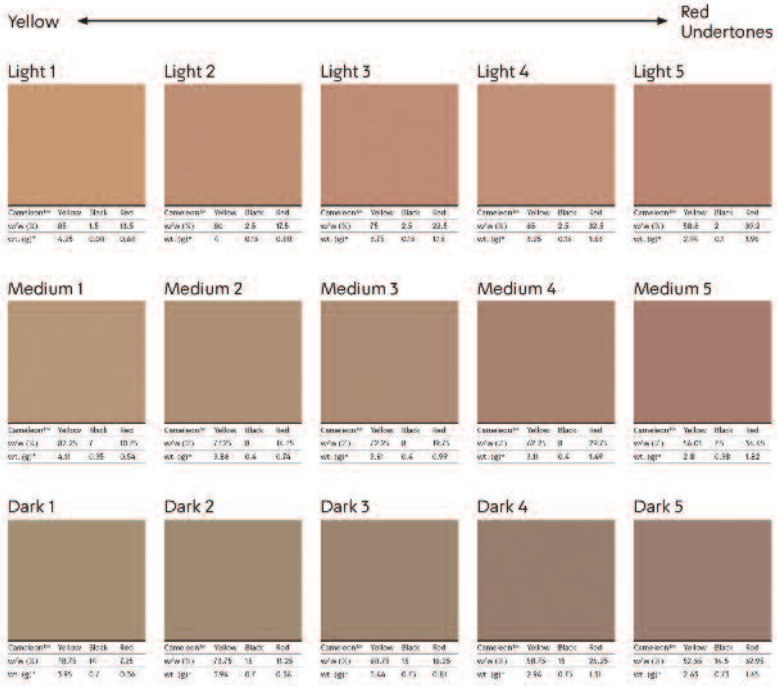




**Figure 4**
Illustration of Tagra's production flowchart process

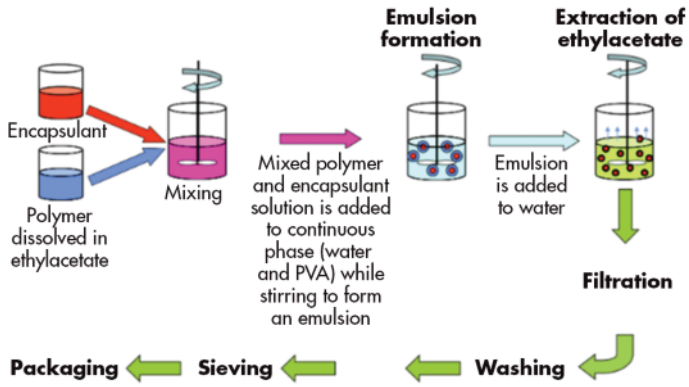
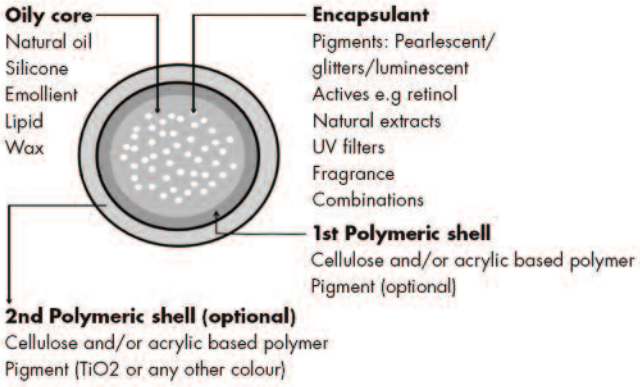



**Figure 5**
General Scheme of Tagra's microcapsule. A single- or double-layered microcapsule can be created




**THE SCIENCE BEHIND THE EFFECT**

Tagra's microencapsulation process is based on the solvent removal method. This facilitates the retention of lipophilic and water insoluble ingredients, such as actives, sunscreens and pigments within the capsules over time. One of the main advantages of this technology is that it doesn't involve any chemical reaction during the process so the chemical-physical properties of the encapsulant aren't changed and modified by any means. All the ingredients composing the microcapsules are in full compliance with worldwide regulations.

Tagra's approach (figure 4) results in the creation of hermetic polymeric microcapsule walls that prevent actives from escaping and protect them from the detrimental effects of excipients including water. The microcapsules appear in a powder form and do not break during formulation. A general scheme of the microcapsule is depicted in figure 5.

The CameleonCaps are double layered microcapsules. The outer polymeric shell contains $TiO_2$ in order to mask the initial colour of the pigment, which is located within the inner core of the microcapsule. The $TiO_2$ composing the CameleonCaps contributes to optimal coverage while breaking the capsules onto skin, while maintaining the white mass tone of the formulation after adding the CameleonCaps.

All other ingredients composing the CameleonCaps help to achieve a rapid, intense colour release and silky sensorial effect while rubbing the formulation onto skin.

The microcapsules release their content by Tagra's RND (Release on Demand) mechanism. This mechanism keeps the active encapsulated until the microcapsules are exposed to physical stress induced by mechanical application – the friction between fingertips and skin (figure 6). By simply pressing and rubbing during application, the polymeric walls collapse and the active ingredient is released onto the skin. While easily breakable for comfortable application, Tagra microencapsulations are physically strong enough to withstand the entire manufacturing processes of cosmetic formulations. These processes include not only mixing but also the pumping stress associated with the transfer and filling of the finished product.

Innovation in beauty requires fast development, which in turn requires stable formulas with reliable raw materials. Tagra's patented microencapsulation technology consistently delivers superior performance, and the company continues to work with multinational global leaders in innovation to set consumer trends and exceed expectations ●

**Figure 6**
Tagra CameleonCaps Yellow before (top) and after (below) application



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