## STRUCTURE OR PIGMENTS? HOW COLOUR IS CREATED WITH COMPOSITES

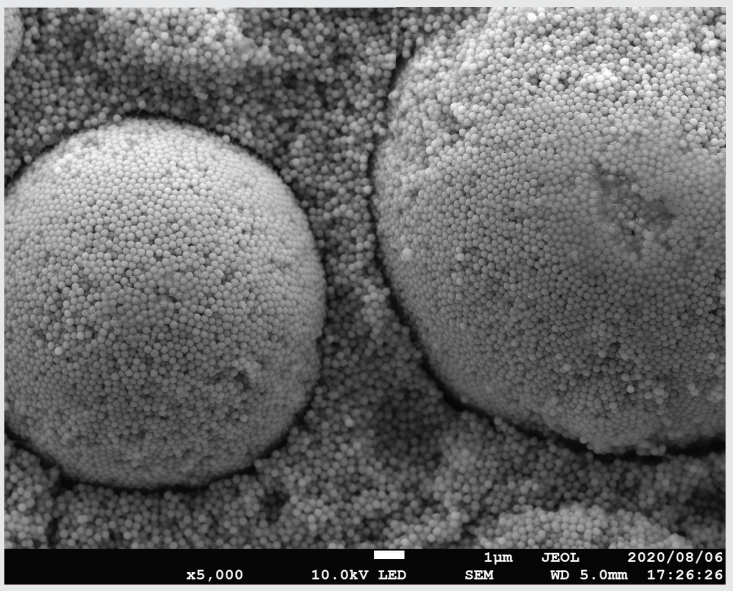
■ *Those who treat their patients with composite fillings have probably already justified this by saying that it is an aesthetically high-quality and metal-free form of restoration. But is this correct? Basically, composites are made up of three components: an organic resin matrix, inorganic fillers and a composite phase of silanes. If you take a closer look at the composition of the organic matrix, you will notice that, in addition to monomers, initiators and stabilisers, it contains dyes and pigments. While pigments made of titanium dioxide and aluminium oxide are used for white colouring. Black, red or yellow colourings can be achieved with iron oxide pigments. These are the shades that are relevant to the colour range of human teeth.*

### Just like leaves and chlorophyll

*But how exactly does colouring with pigments actually work in composites? As with a plant, light with all its wavelength ranges hits a leaf, where it is largely absorbed by the chlorophyll. Only the green wavelengths are reflected, which is why we perceive the leaf as green. The colouring in this case has a chemical cause. This mechanism also underlies the colouring of most composites. The iron oxides contained in them, for example, reflect red or yellow wavelengths and thus provide the desired colour tone.*

### Colour from structure

*However, it is also possible to create colour without the addition of pigments. The decisive term in this context is "structural colour". In contrast to pigment colours, they do not result from the absorption or non-absorption of certain wavelengths of light, but are created based on certain surface structures. The cause is not chemical but physical. These structures interact with the light and give rise to colour, for example, through interference or diffraction.*





### Structural colour in the dental practice

*In the field of dental composites, structural colour was used as the main colour mechanism for the first time in 2019. Using Smart Chromatic Technology, the Japanese supplier Tokuyama succeeded in making the mechanism usable for its universal composite Omnichroma. The new flowable version of this material, Omnichroma Flow BULK, now also uses this technology and does not require any artificially added dyes or pigments. This is due to the microstructure of the material. Of particular importance in this context are the spherical fillers with controlled particle size and structure. They create the structural colour, which also reflects the surrounding tooth colour.*

*This results in a pronounced chameleon effect with real added value for the practice and patients. With only one shade, Omnichroma Flow BULK allows for infinitely variable colour matching to all 16 classic VITA tooth shades from A1 to D4. This not only ensures that the right shade is always in stock, but also makes the restorative therapy workflow easier and more efficient.* ◂◂

**Tokuyama Dental, Japan**
www.tokuyama-dental.eu
**Hall 10.1, Booth A40**

## DLYTE BY GPAINNOVA: REVOLUTIONISING POLISHING SOLUTIONS FOR DENTAL LABORATORIES

■ *GPAINNOVA, one of the leading technology business groups specialising in metal surface finishing, is exhibiting its latest solutions under the brand DLyte at IDS 2023. Aimed specifically at dental laboratories, these cutting-edge solutions increase efficiency, reduce costs and treat titanium alloys with remarkable ease. IDS visitors will be able to discover the innovative features of DLyte, including a new electropolishing process, a highly effective gel electrolyte and advanced machinery that has been completely redesigned to deliver improved results. DLyte is also presenting new polishing solutions designed to enhance efficiency, save resources and treat titanium alloys without effort.*

*One of the key solutions on offer is a more efficient and cost-effective way to polish titanium dental parts. Since this is the material of choice for many dentists owing to its biocompatibility, corrosion resistance and mechanical properties, it has been traditionally considered a hard-to-machine material. Despite of this, GPAINNOVA's experts have overcome this challenge with the help of an innovative process based on a dry electropolishing process. This system removes material from the metal surface by ion transport, using a non-electrically conductive liquid that acts as a media carrier, while protecting titanium during the process from the oxygen present in the air. As a result, technicians can get high-gloss finishing, geometry preservation, uniformity and repeatability, with the lowest cost per piece and minimal material removal.*

*Furthermore, DLyte is showcasing its new gel electrolyte for an even brighter finish. In just 5 to 10 minutes, dental laboratories will be able to obtain mirror-finished removable partial dentures. The electrolytic gel does not damage the geometry of metal parts and provides superior brightness.*

*DLyte recently released new fixation systems and parameters which increase existing equipment productivity by a factor of three. This solution increases the capacity per cycle significantly and reduces the processing time for DLyte Desktop, DLyte 1, DLyte 10 and DLyte 100.*

*Crowns and bridges can also be automatically polished with DLyte. With this new solution, dental laboratories can process all types of metal dental parts all in one machine. This increases the versatility of the equipment for dental laboratories producing crowns, bridges, bars and frameworks.*

*GPAINNOVA not only wants to present its new technology at IDS 2023, but also to be close to its customers and friends in order to meet their needs. During this trade show, all visitors to the booth will be able to get their own samples polished for free and to take part in a raffle for special prizes.* ◂◂

**GPAINNOVA, Spain**
www.gpainnova.com
**Hall 2.2, Booth D019**

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