Discovering the world of dental ceramics

A blog delivers answers to questions about dental ceramics which concern dental laboratories today:

By Ivoclar Vivadent

Ivoclar Vivadent has established a new interactive online platform, whose contents address the challenges currently facing dental laboratories.

In our fast-paced world, dental laboratories are confronted by many questions. They look for enhanced efficiency and cost-effectiveness, for solutions that provide reliable support in their everyday work. Many are unable to keep track of the continuously increasing variety of products, product systems and processes that are entering the market and thus seek direction.

Increasing productivity and efficiency

The new online platform www.worldofceramics.com provides useful tips on the issues that concern laboratory owners. For example, they will learn how to increase the productivity of their lab, what they should pay attention to when selecting a ceramic material or equipment and what the current trends in the field of dental ceramics are. Moreover, they will be given the opportunity to participate in the discussion and contribute their experience as well as provide further tips.

New products in October

But that's not all. During October, dental technicians will be informed about the new products developed by Ivoclar Vivadent and how these will provide answers to today’s pressing questions for dental laboratories.

Natural-looking imitation of pink esthetics

Completing a denture base using the IvoBase System

By Carsten Fischer, Germany

Even in the case of complex prosthesis reconstructions, patients want their dentures to look natural in addition to having the basic functions (speaking, chewing, tasting) returned to their stomatognathic system. Dentures should by no means have an adverse effect on the patient's aesthetic appearance. Esthetic soft tissue design reflects this philosophy.

The IvoBase® denture base system offers an efficient method to create custom-made esthetic soft tissue reconstructions. The patients’ expectations can be ideally met with a flair for esthetic design and a combination of three materials – Ivoclar denture base material, SR Nexco® light-curing lab composite (customization) and ideally designed denture teeth.

IvoBase System

The IvoBase System is based on a fully automated injection and polymerization process. All the components (flasks, capsules, injector, etc.) are coordinated with each other: Chemical shrinkage of the resin is compensated during the polymerization process due to thermal management in the flask. As a result, volumetric shrinkage is prevented by the continued supply of additional material during the polymerization process to provide a denture base that demonstrates a high accuracy of fit and an excellent surface finish. Chemically, the IvoBase denture base materials fall into the category of self-curing polymers but offer the qualitative advantages of heat-curing polymers. Monomer and polymer are supplied in pre-dosed capsules to ensure an optimal mixing ratio and to eliminate direct skin contact with the monomer.

The IvoBase System results in denture bases that demonstrate lifelike pink esthetics and closely resemble the light-optical properties of the natural gingiva. Characterizations can be easily applied to the denture bases to accommodate the specific expectations of the patient.

Case presentation

A partially edentulous upper jaw was to be restored with a palate-free denture retained with telescopic crowns. The inner (primary) zirconia copings for
the anterior region to vent the air bubbles. Even stone was skimmmed off so that a flush surface resulted between the stone and flask lid. Once the stone had set, the flask was heated in a water bath at 90°C and then the two flask halves were separated. The wax was now soft and could be easily removed in large pieces. After the full access former had been removed, the model and teeth were boiled out with clear boiling water to thoroughly remove all wax residue.

Final finishing and polishing

Both flask halves were identical. Prior to investing the model, I placed the flask lid, access former half and filter wax component in one of the flask halves. After applying a thin coating of petroleum jelly to the inner surfaces of the prepared flasks, I soaked the model with the mounted waxed-up denture with water and isolated it with stone-to-stone separating fluid. The model was now ready for being invested in plaster; a Class III dental stone was selected for this purpose. I took care to place the model at the centre of the flask and to ensure a space between the anterior margin of the model and the flask of approx. 10 mm. To create a flush surface between the edge of the model and the flask housing, I removed all surplus plaster whilst it was still soft. The stone surface should be flush with the access former to prevent air from spilling during the subsequent working procedure.

After the stone had hardened, I replaced the access former half with the access former full and positioned the prefabricated injection wax component. As a palate-free denture base was fabricated in the present case, the sprues were pressed onto the maxillary tuberosity. I made sure that the spur was contiguous in all areas of the denture base. Then, I attached what are known as waxing channels at the anterior region to vent the flask cavity during the injection process. These components were also prefabricated and were easy to connect to the denture base. Important: the injection channels must not come into contact with the flask housing. I coated the teeth and gingival areas with a medium-body addition curing silicone (A-silicone of a shore hardness of 65) and then applied some slip-plug to the silicone before I had set to create a retentive pattern and secure the silicone in the stone. No silicone was applied to the occlusal surfaces and access former. After isolating the stone surface, I positioned the upper flask half and locked the flask halves using the locking clasp. Then, I filled the flask with den-

tar (Class III) with the help of a vibration device to avoid air bubbles. Having filled the flask, I skimmed off so that a flush surface resulted between the stone and flask lid. Once the stone had set, the flask was heated in a water bath at 90°C and then the two flask halves were separated. The wax was now soft and could be easily removed in large pieces. After the full access former had been removed, the model and teeth were boiled out with clear boiling water to thoroughly remove all wax residue.

Lab procedure

After both the dentist and patient had approved the wax-up, the denture was ready to be processed into acrylic. To perform this task, I used the Ivoclar ven- ture base material, which allowed me to transfer the wax-up to the final restoration without loss of detail.

Finishing and polishing

Both flask halves were identical. Prior to investing the model, I placed the flask lid, access former half and filter wax component in one of the flask halves. After applying a thin coating of petroleum jelly to the inner surfaces of the prepared flasks, I soaked the model with the mounted waxed-up denture with water and isolated it with stone-to-stone separating fluid. The model was now ready for being invested in plaster; a Class III dental stone was selected for this purpose. I took care to place the model at the centre of the flask and to ensure a space between the anterior margin of the model and the flask of approx. 10 mm. To create a flush surface between the edge of the model and the flask housing, I removed all surplus plaster whilst it was still soft. The stone surface should be flush with the access former to prevent air from spilling during the subsequent working procedure.

After the stone had hardened, I replaced the access former half with the access former full and positioned the prefabricated injection wax component. As a palate-free denture base was fabricated in the present case, the sprues were pressed onto the maxillary tuberosity. I made sure that the spur was contiguous in all areas of the denture base. Then, I attached what are known as waxing channels at the anterior region to vent the flask cavity during the injection process. These components were also prefabricated and were easy to connect to the denture base. Important: the injection channels must not come into contact with the flask housing. I coated the teeth and gingival areas with a medium-body addition curing silicone (A-silicone of a shore hardness of 65) and then applied some slip-plug to the silicone before I had set to create a retentive pattern and secure the silicone in the stone. No silicone was applied to the occlusal surfaces and access former. After isolating the stone surface, I positioned the upper flask half and locked the flask halves using the locking clasp. Then, I filled the flask with den-

Lab procedure

After both the dentist and patient had approved the wax-up, the denture was ready to be pro-

Contact Information

Carsten Fischer
siris ceramics
Corner Street 44-48
60528 Frankfurt on the Main
Germany
info@siris-ceramics.com
Accurately colour zirconia using the Amann Girrbach colouring concept

By Amann Girrbach

Colour zirconia restorations accurately and reproducibly – this is performed successfully using the Ceramill Colouring Liquids from Amann Girrbach. The colouring liquids were developed and adapted according to the specific material characteristics of the respective zirconia group (LT, HT, SHT) to ensure consistently exact and reliable results based on the VITA classical shade guide.

All shades of the VITA classical shade guide can only be reliably matched right away using this optimal harmonisation of material and colouring solution.

Three material-specific Ceramill Liquid sets have been created that are used for easily and precisely customising the milled restorations.

A compact liquid set with 4 basic shades and 2 shade modifiers was therefore developed specifically for the slightly translucent zirconia Ceramill ZI (LT), which only requires an aesthetic basis for the porcelain veneer due its use as an anatomically reduced framework material.

A clearly designed set of colouring solutions in the 16 VITA classical tooth shades and shade modifiers for the incisal/occlusal surfaces and gingival region is also available for each of the (super-) highly translucent zirconia materials Ceramill Zolid and Ceramill Zolid FX (HT/SHT), which are also used for monolithic restorations. The shades can be applied directly to the restoration without mixing and optimise the reliability and efficiency of the workflow. Both liquid sets provide the maximum degree of aesthetics, customisation and cost-effectiveness as they are coordinated with one another as well as with the specific working and material parameters for Ceramill Zolid and Ceramill Zolid FX.

The Amann Girrbach colouring concept is completed by the Ceramill Stain&Glaze set, which can especially be used to enhance the light dynamics and in-depth shade effect of monolithic restorations.

Contact Information

Amann Girrbach AG
Herrschaftswiesen 1
6842 Kobelach | Austria
Web: www.amanngirrbach.com
The Fascination of Simplicity

By Dr. Patrice Lalet, France

After 50 years of research and development, CEREC can be truly described as a major medical and technological revolution. This guiding principle gives rise to a clearer, more ergonomic, and more efficient system. As a result, the system and training are aimed at easy use of the software and the milling of a wide range of innovative materials - all with the latest digital technology. With the patient-specific surgical guides CEREC GUIDE 2 for a safe placement of implants and the CEREC ORTHO software for orthodontic treatments CEREC enables an incomparably broad range of applications to the practitioner and the patient to ensure optimal treatment results.

Possibility of single-visit dentistry which leads to more comfort for the patient and the dentist.

Quo vadis, CEREC?

A very typical example for CEREC treatment is presented in the following case: A 42-year-old patient came to my practice to improve the look of her anterior teeth. Since the teeth emerged at the age of 6 or 7 years she suffered from a lack of enamel. So we decided to make crowns on lively teeth. With the aid of the CEREC Bluecam we captured the preparation, the antagonist and the bite situation and the 3D preview appeared on the monitor in the CEREC software.

On the basis of these intraoral impressions the software generated a virtual 3D model. When generating the initial proposal for the four crowns, the software used the Bioesthetic modelling function. We sent the design of the restorations to the CEREC milling unit and clamped a bloc made of zirconia-reinforced Lithium-Silicate. The transparency of the ceramic assured very natural looking teeth. We added stain and glaze to obtain this result. After characterisation, we placed the crowns and the patient could leave the practice with a new nice smile.

About the Author

Dr. Patrice Lalet has been a CEREC user for 13 years and received his certification as a CEREC trainer from ISCD in 2004. Dr. Lalet is member and co-founder of the French CEREC training team e-dentisterie.