



▲ Milled BRILLIANT Crios blocs

PERFECT WALLS

In matters of aesthetics, dental technician David Zweifel would be a difficult man to surpass in a hurry. In this interview, the experienced laboratory manager and material specialist from St. Gallen explains how extremely thin walls can be created without difficulty and why CAD/CAM composite blocs are already proving to be the new magic bullet in everyday work.

Originally, the passionate expert on aesthetics wanted to become a goldsmith. Now he is busy creating "oral jewellery": David Zweifel of Switzerland has now spent over 30 years passionately working as a dental technician in St. Gallen. In the process, he has seen many a material trend come and go. On the occasion of his 30th anniversary of service, he spoke to us about novel high performance composites, dentists resistant to advice, and digitisation in modern prosthetics.

Question: "Mr Zweifel, what must the perfect dental material deliver in your opinion?"

D. Zweifel: The best dental material is still the natural tooth, wouldn't you say? Ideally, a state-of-the-art material would offer properties as close to dentine as possible, both in terms of abrasion resistance as well as gloss retention and durability. At the same, the restoration should provide a harmonious match to the patient's teeth and be gentle on the opposing tooth. What good is a stable connection if the problem is only transferred to the other jaw?

Fortunately, materials research has recognised that a material with a low modulus of elasticity dampens masticatory forces much better than the traditional hard as steel restorations of the 80s and 90s. If you like, we are presently experiencing a renaissance of highly flexible composite solutions.

Q: "Does that mean that the composite all-rounder will soon be banishing ceramic completely from the laboratory?"

D. Zweifel: It is true to say that Reinforced Composite CAD/CAM blocs are presently the rage. Dentists are already aware of the advantages of this versatile material from classical filling therapy. Nowadays, final inlays, onlays, fully anatomical crowns and veneers can be fabricated quickly and easily from composite using the classical CEREC manufacturing process. The submicron hybrid composite blocs are fast becoming an all-purpose answer in everyday lab routines. During grinding, a modern composite material is far "better-natured" than ceramic and is easier to shape. Subsequent

corrections in shade or shape can be realised easily by the clinician in his/her own practice, which of course also meets the needs of dentists. Overall, the accuracy of fit of acrylic crowns is extremely high and the flexible material fits more harmoniously into the row of teeth than brittle ceramic.

Q: "How about sculptability? Which margin thicknesses are possible with state-of-the-art composites?"

D. Zweifel: For example, I was able to play the role of "midwife" for the innovative BRILLIANT Crios submicron hybrid composite material of Swiss dental specialist COLTENE and was closely involved in its development. During the lengthy fine-tuning process, I myself must have ground hundreds of units. What impressed me most of all: the walls of the fabricated pieces were perfectly stable every time! If you take a binocular look at the margin accuracy, you can see that even tapered restoration margins of only 0.1 mm thickness can be ground perfectly without becoming cragged. Flaking or even cracks are truly a thing of the past. There is hardly a material which offers so much opportunity for accurate work, a veritable delight for the Swiss soul.



▲ Exceptional grinding precision

Q: “Why is it that many dentists are still wary of CAD/CAM composite blocs?”

D. Zweifel: Well, many dentists are not fully aware, or only vaguely, of the progress composites have made during the past ten years. They still remember the days of earlier mixing materials which were launched with considerable marketing ballyhoo and claimed to be the ultimate solution. Alone in 2016, I had to process guarantee cases for roughly CHF 5,000 of poorly conceived hybrid acrylics where the mountings had not been properly thought out at the time. It is therefore quite obvious that clinicians who turn to me with such revisions do not want to hear about these “hybrid ceramics”! In such cases, considerable powers of persuasion are required to show people what true CAD/CAM composite blocs can achieve these days. Bonding is the same as for any other filling: if I want to create a proper monobloc, then I must always attach a crown adhesively with a bonding system that fits the tooth substance, core build-up or abutment respectively; then I will end up with a good, long-lasting solution.

Q: “How do you convince customers who are resistant to advice of the benefits of the new restoration methods?”

D. Zweifel: Those concerned need to experience the high quality themselves,

then they quickly become aware of the high-quality solutions I can offer. Recently, a patient who was very particular about shade and shaping, wanted to have two of her anterior teeth in the mandible done. Unfortunately, she had little time due to the upcoming holidays. I made the following proposal to the treating dentist: “I will grind two crowns as long-term temporary restorations now for cementing.” A BRILLIANT Crios milling bloc in VITA shade A2 was used. The result was a continuous smooth colouration from top to bottom without any discolouration and a good match to the overall picture of the mouth. After seven weeks, the patient was no longer interested in any other type of restoration.

Currently, I have again fabricated a partial crown with the flexible CAD/CAM composite blocs. After the try-in, the patient admitted not being able to detect anything new in the mouth when exploring with the tongue. The high wear comfort of the restorations convinces even the most outspoken sceptics.

Q: “How much time do you save when processing real CAD/CAM composite blocs?”

D. Zweifel: I would say, actually 50 to 70% faster when all is said and done – and with a result that is far more aesthetic than before. The entire firing process is eliminated and polishing is unbelievably quick. As

the name implies, BRILLIANT Crios blocs have an intrinsic fine satin gloss, e.g. they require little in terms of processing. As a rule, I would recommend a two-step approach to beginners: first coarse grinding and then the use of two special fine grinders. Using the “Extra Fine” grinding mode of my CEREC MC XL, the crowns turn out even more beautiful than with the fast mode.

Q: “Doesn’t increasing digitisation and the permanent use of CAD/CAM in everyday lab routines rob dental technicians of their creativity?”

D. Zweifel: Not at all, CAD/CAM technology is an excellent support for daily work! Whereas I used to have to tediously apply wax, I can now support cusps exactly and set minimum layer thicknesses. I have become more efficient and at the same time deliver better results - what a dream combination!

Despite all the craftsmanship in our profession, one cannot afford to be blind with regard to the new media. 3D printing may not be fully matured yet, but such methods will continue to dictate and facilitate our work.

When I saw the first CAD/CAM devices at the IDS years ago, I wanted to be part of their development right from the beginning. At the time I said to my wife that the amortisation costs would certainly not stop me, or, in the words of the Swiss Railways:



▲ BRILLIANT Crios restorations

"I am boarding the train now and I am not going to wait until it arrives in Geneva." Reservations about the initial outlay proved entirely unjustified in retrospect: I had already easily surpassed the break-even point after only half the calculated time.

Q: "In other words: Modernisation pays off... "

D. Zweifel: Absolutely! It never hurts to expand one's service portfolio! Unfortunately, these days people always tend to look at the price first. The daily battle against the "cheap is cool" mentality also affects us in the laboratories, but one should always be aware of what one is comparing. For example, I recently had to make an affordable proposal for a patient on social benefits. He did not wear dentures and refused a gold-zirconium bridge for cost reasons. Finally, I ground a titanium framework and veneered it with composite blocs. After grinding the crowns and bonding everything, the appearance was sensational - nearly like real ceramic, but in contrast, the dentures were reimbursed without any problems by the health insurer. A "high quality long-term temporary restoration"

is not much more expensive than a steel denture with mounting. And if I can mill two crowns from a size 14 CAD/CAM composite bloc instead of one, then the material costs are completely different. Those wishing to check the sums should simply make sure to use the right numbers.

Q: "And last but not least, how do you view the future of dental laboratories?"

D. Zweifel: If you project the present advances in materials research into the future, then dental materials will become even more accurate and reliable with regard to the special properties of human teeth. Meanwhile, the high performance composites keep offering better quality and more attractive shades, but who knows, maybe we will end up growing bio-regenerative materials in our own laboratories. The dental technician as craftsman and artist will definitely not be redundant! I also have an abundance of ideas for other product innovations: among other things, I personally would find tricoloured CAD/CAM composite blocs a highly attractive proposition for the future, where I could

position enamel, dentine and neck dentine as with ceramic before grinding crowns or inlays. In the long term, I look forward to being surprised by the next smart solutions created by our Swiss dental specialists as well as specialists from around the world. When the time has come, I will definitely be there, readily waiting at the "railway station" ...



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