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Everyone can use a little magic: a distinctive concept for micro-layering.

By DT Benjamin Detrez and
Dr Anthony Rosseel, France



DT Benjamin Detrez started as a dental technician in 2002. As a son and grandson of lab technicians, the profession has been a real vocation as long as he can remember. He started his apprenticeship at the Jacques Broutin laboratory, in Marck-en-Calais (France), a laboratory specialized in removable prosthetics. After graduating, he continued to specialize in fixed prosthetics. During seven years, he progressed in the laboratory of Mr Godefroy Vandeweghe in Willems near Lille (France). After an intermezzo of 6 years as a sales representative for PX DENTAL, a distributor of dental laboratory products, the passion for dental prosthetics took over again. In 2018, he established his first laboratory in partnership with DT Xavier Beauget. Currently they own three laboratories together. Micro-layering allows Benjamin to combine CAD/CAM and ceramics, two disciplines he is passionate about.



Dr Anthony Rosseel started his profession in 2018. For three years, (from 2018 to 2021) he has been working in an under-resourced area in Bapaume, accumulating quite a lot of general experience. Thereafter, he teamed up with Dr Declercq in Tourcoing (France), specialized in implantology and oral surgery, where he is mainly focused on periodontology and aesthetics. He is experienced in digital dentistry and is much involved in the designing process, working closely together with Benjamin's lab.

After 20 years of practice, I still look at the evolution of our profession with the same astonishment.

Digital technology has significantly changed the manufacturing process of dentures.

Materials are constantly evolving; zirconia is gaining in translucency, and porcelain fused to metal is becoming rarer.

In my laboratory, monolithic zirconia is omnipresent.

While working with CAD/CAM is attractive and zirconia can be very beautiful, it is often frustrating to make anterior restorations from monolithics.

Perfectionist and eternally dissatisfied as we are, a little something always seems to be missing...

It is precisely this "little something" that you will discover in the micro-layering with GC's Initial IQ ONE SQIN concept.

Clinical case

Lithium disilicate veneers with Initial LiSi Press (GC)



Fig. 1: Initial situation

At first, when I received the order for this case (Fig. 1), I was surprised by the imperative request for a monolithic restoration. My ceramist ego was somewhat bruised.

But the arguments of the dentist, Dr Anthony Rosseel, were convincing:

- True copy of the virtual mock-up (which was delivered and validated through Smilecloud¹)
- The patient's request for a white "standard" without specific characterizations
- More affordable rate

As a first step, it is necessary to design the construction in CAD.

We received an impression of the mock-up from the dentist. The model and mock-up were combined in the CAD software (Fig. 2).



Fig. 2: a) Digital model of the prepared teeth. b) Digital model of the mock-up.

This way, we have an exact replica of the patient's request. It is enough to slightly reduce the vestibular to create space for the micro-layering. Nothing could be simpler with CAD software and reduction functions.

The parts were milled from wax for pressing with lithium disilicate (Fig. 3). Obviously, an alternative would be to mill the restoration directly from Initial LiSi Block (GC).



Fig. 3: a) Veneers milled from wax around a pressable ingot (Initial LiSi Press, GC); b) the wax veneers on the model; c) the pressed veneers (Initial LiSi Press) after adjustment of the cervical margin and surface treatment (grinding and sandblasting)

The first phase of the "ONE SQIN magic" can begin.

The system brings together three products that complement each other perfectly:

- Initial IQ Lustre Pastes ONE (feldspar-based paintable ceramic)
- Initial Spectrum Stains (universal powder stains that can be added to Lustre Pastes and/or ceramics for infinite colour nuances)
- Initial IQ SQIN (ceramic for micro-layering)

With the Lustre Pastes and Spectrum Stains, we characterize the substructure before the actual micro-layering (Fig. 4).

This technique offers vitality to the restorations.

This first layer gives the framework its colour and individualization and meanwhile serves as a connection layer for the SQIN ceramic.



Fig. 4: Lustre Pastes ONE (L-6: Enamel Effect 6 Dark Blue) with Spectrum Stains (SPS-1: Ivory White) were applied onto the veneer.



Fig. 5: The restorations after the first firing with Lustre Pastes ONE. This firing also serves as the connection firing.

¹ www.smilecloud.org/ Smilecloud is a tool for team collaboration and communication in the context of treatment planning and design.



Fig. 6: Micro-layering with SQIN. Dentin Body-A, Translucent TO and Enamel E-58 were used.



Fig. 7. a) Veneers after the SQIN firing; **b)** Front view on the model; **c)** Lateral view on the model. The surface texture and gloss (autoglaze – no polishing) are striking.

Once this individualisation and connection firing is complete (Fig. 5), we enter the second phase of work, which is the micro-layering with SQIN.

It is carried out in three masses (Fig. 6):

- Dentin Body-A, Body-B, Body-C, Body-D or Dentin BL-D (Bleach)
- Translucent TO (Opal Booster)
- Enamel (E-57, E-58, E-59, E-60 or Bleach Enamel)

Hence, all Vita shades and beyond can be reproduced.

After firing, the “magic” takes on its full meaning (Fig. 7).

Indeed, the auto-glaze properties are astounding. No retouching is necessary after firing.

All form and texture, which are so important to the proper integration of prosthetic restorations, is given in the wet stage, only making use of the brush.

The combination of the Form & Texture Liquid and the fine particle size of the SQIN ceramic results in a very dense slurry with unique

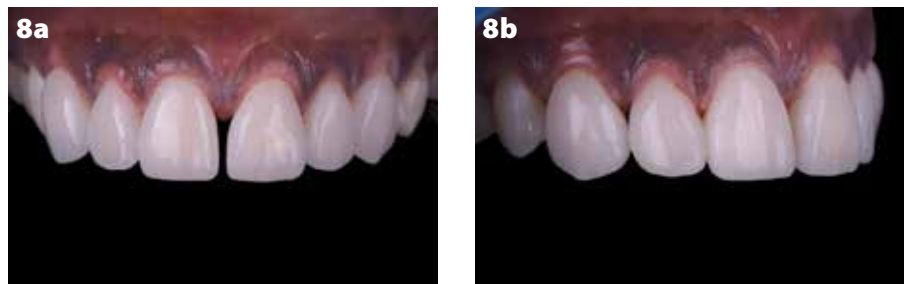


Fig. 8: Final result with the restorations bonded to the teeth. **a)** Intraoral front view; **b)** Intraoral side view; **c)** Extraoral view.

modelling properties. Its distinctive consistency allows easy shaping and texturing. It is also recommended for beginning ceramists because of its ease of use.

The patient, dentist and prosthetist were all fully satisfied with the work (Fig. 8).

And this achieved with ease and without any fear, because with micro-layering, an exact copy of the mock-up can be obtained.

In the above case, the ONE SQIN concept was used on lithium disilicate.

ONE SQIN on zirconia

The same applies to zirconia (Figs. 9-11). The firing programs are just different since lithium disilicate requires low fusing temperatures.

The framework can be milled from either white or (multi-)shaded zirconia. These materials both have different benefits. While very nice results can be obtained with preshaded zirconia, white zirconia can be coloured quite fast with liquids in a very predictable and easy manner. The most important step in the final colour result, however, remains the addition of the Lustre Pastes ONE, which - next to the colour - also add some depth, fluorescence and opalescence.

Note that the Lustre Pastes ONE as well as SQIN also come in (non-fluorescent) GUM shades (SQIN: GUM Dark, GUM Light and GUM Neutral). Hence, gingival replacement is also feasible (Figs. 9b and 11).



Fig. 9: Some examples of restorations in zirconia, characterized with ONE SQIN.

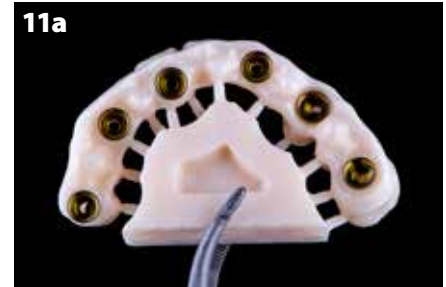
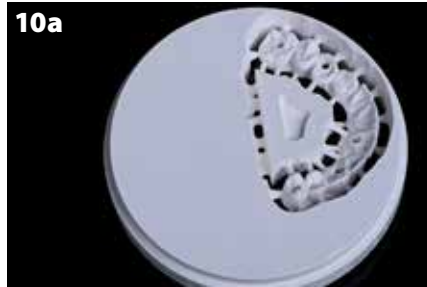


Fig. 10: Large zirconia restoration. **a)** Milled structure in the green state. **b)** The microlayered framework with Ti abutments. **c)** After placement in the mouth

Fig. 11: Zirconia restorations including gingival replacement. **a)** Milled structure with the Ti abutments in situ. **b)** Front view of the sintered framework. **c)** After micro-layering with ONE SQIN.

The dentist's conclusion:

In my practice, micro-layering has now become the most used approach for fixed prosthetics. In my opinion, this is the best approach from a quality-price ratio point of view. I use the services of Smilecloud a lot. With the patient, we begin a process of validation of the mock-up. The final realization must be, to the detail, the exact copy of the mock-up.

This is possible with micro-layering.

In addition, ONE SQIN guarantees several essential elements:

- an aesthetic result with lots of vitality,
- a brilliant and natural texture,
- the presence of fluorescence (unlike monolithic zirconia)
- respect for the desired shade

Sometimes, it's even difficult to tell the difference between conventional layering and micro-layering with ONE SQIN.