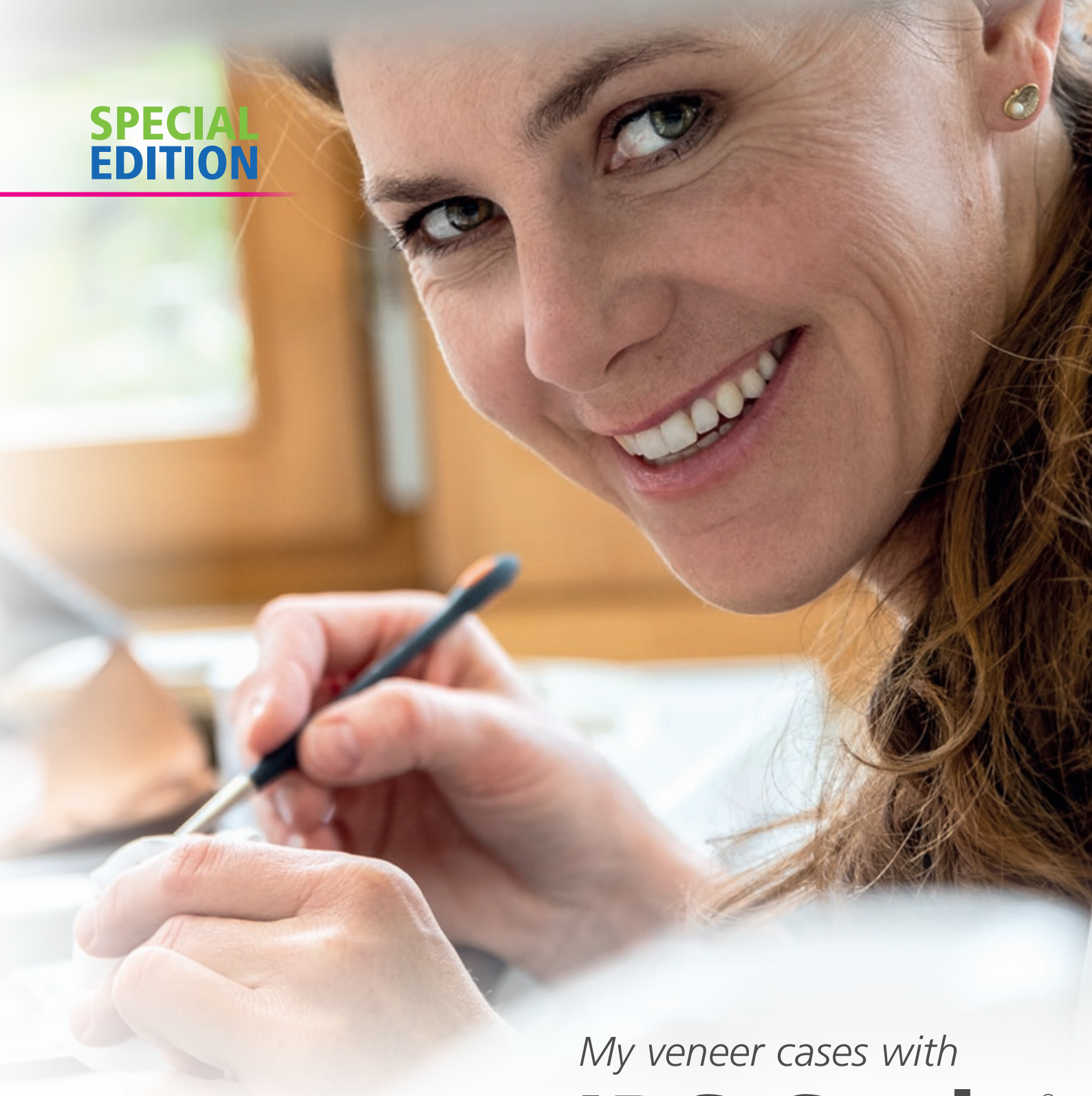


SPECIAL EDITION

My veneer cases with

IPS Style®

Carola Wohlgenannt

ivoclar vivadent®

passion vision innovation

My veneer cases with IPS Style®

I often use all-ceramics in my work and I teach courses in the field of all-ceramic restorative solutions. A large share of my work is solved with IPS e.max®. In this Special Edition, I will focus on the IPS Style® metal-ceramic. Metal-ceramic is not exactly a material associated with all-ceramic restorative treatments. In my opinion, however, these two materials are not mutually exclusive: For me as a ceramist, each ceramic material has its own specific merits and field of application. The fabrication method, application procedure and, in some cases, the financial means of patients are decisive factors when I decide on which material to use.

IPS Style Ceram is the material of choice for me when fabricating veneers. They have to meet high esthetic standards, especially if they are placed in the anterior region.

Refractory dies were used in all the restorations presented in this report. This approach requires a particularly high level of skill and long-term experience. The final outcome can only be seen once the restorations are seated in the patient's mouth.

Case 1

Reshaping peg-shaped teeth and extending the length of teeth with veneers

MAKE IT EASY.

Initial situation

The patient came to see me in my laboratory because she was unhappy with the esthetics of her anterior teeth.

Her two lateral incisors were disproportionately small compared with teeth 13 and 23. Teeth 11, 12, 21 and 22 should additionally be extended in direction of the soft tissues. The idea was to provide the lateral and central incisors with ultra-thin veneers made of IPS Style.

I always begin work on a veneer by creating a wax-up. If the teeth are layered one after the other, the integrity of the entire dental arch can be maintained more easily during the individual working steps. Starting with the lateral incisors 12 and 22, I built the veneers layer by layer using IPS Style.

Dentist:
Dr Christian Schult

Case planning/Photographic documentation/
Dental lab work:
MDT Carola Wohlgenannt

The layers

Tip:

It is essential to thoroughly wet the refractory dies of the model before applying the wash and the layers. A moist substrate prevents the formation of bubbles. In addition, the ceramic does not dry out during the layering procedure. This is crucial as the veneer remains on the refractory die for the entire layering procedure until the glaze is applied. Fabrication errors or shade mismatches only show up once the restorations are placed in the patient's mouth. Good preparatory work is therefore crucial.

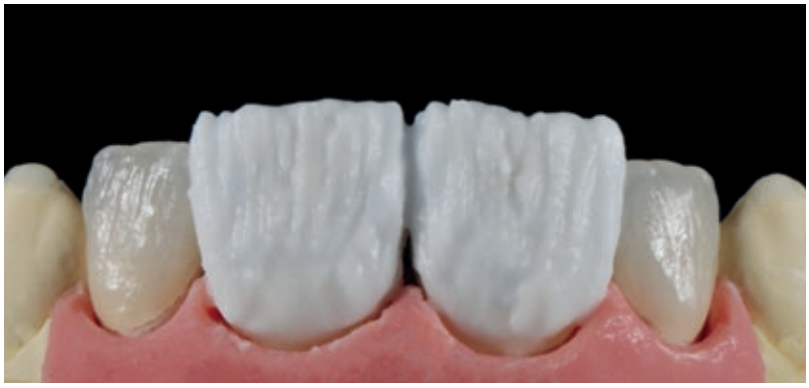
The layering process begins by applying a wash. For this, I applied and fired IPS Style Ceram Opal Effect OE1 in a thin layer.

Subsequently, I applied IPS Style Ceram Cervical Transpa CT yellow to the cervical region to prevent the ceramic from spalling in the marginal areas during the second firing cycle. I applied and fired a thin layer of IPS Style Ceram Opal Effect OE1 along the incisal margin. Next, I established the width of the tooth using IPS Style Ceram Dentin A1 and I fired this layer too.

The wax-up assisted in placing the dentin structure correctly.

To outline the length of teeth 12 and 22, I created an incisal shield using IPS Style Ceram Incisal I1.

Next, I imitated the internal structures such as the mamelons using IPS Style Ceram Mamelon MM light. Then, I added layers of IPS Style Ceram Incisal I1 and various translucent Impulse materials to complete the veneer.



Tip:

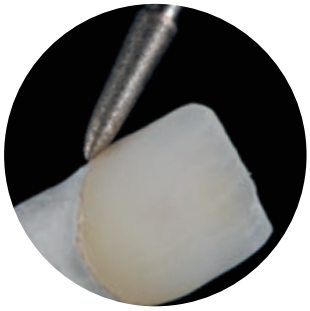
For veneers, I always add some IPS Style Ceram Incisal or IPS Style Ceram Transpa T neutral Impulse material to the dentin material before I apply it. This leads to a more translucent result that looks more natural. It is important to apply the material slightly proud of the margins for the last firing cycle. The margins will then be ground to the exact shape and a thin taper before glaze firing the veneer.

The IPS Style veneers after the first firing.

The bright brilliance of IPS Style Ceram never ceases to fascinate me. Its firing stability is also exceptionally high: The layered contour is retained after the firing process. Shrinkage is minimal.

The ultra-thin IPS Style veneers show a natural translucency and opalescence under transmitted light. There is a lively interplay of shades, emanating from the depth of the tooth.

Following the corrective firing, the surface characteristics were applied. The structures and contours of the layered tooth can be rendered visible more clearly by dusting the surfaces with silver powder. This makes it easier to perform a final check after completing the surface design.



Before glaze firing the veneers, I ground the margins so that they ran neatly along the markings on the refractory die.

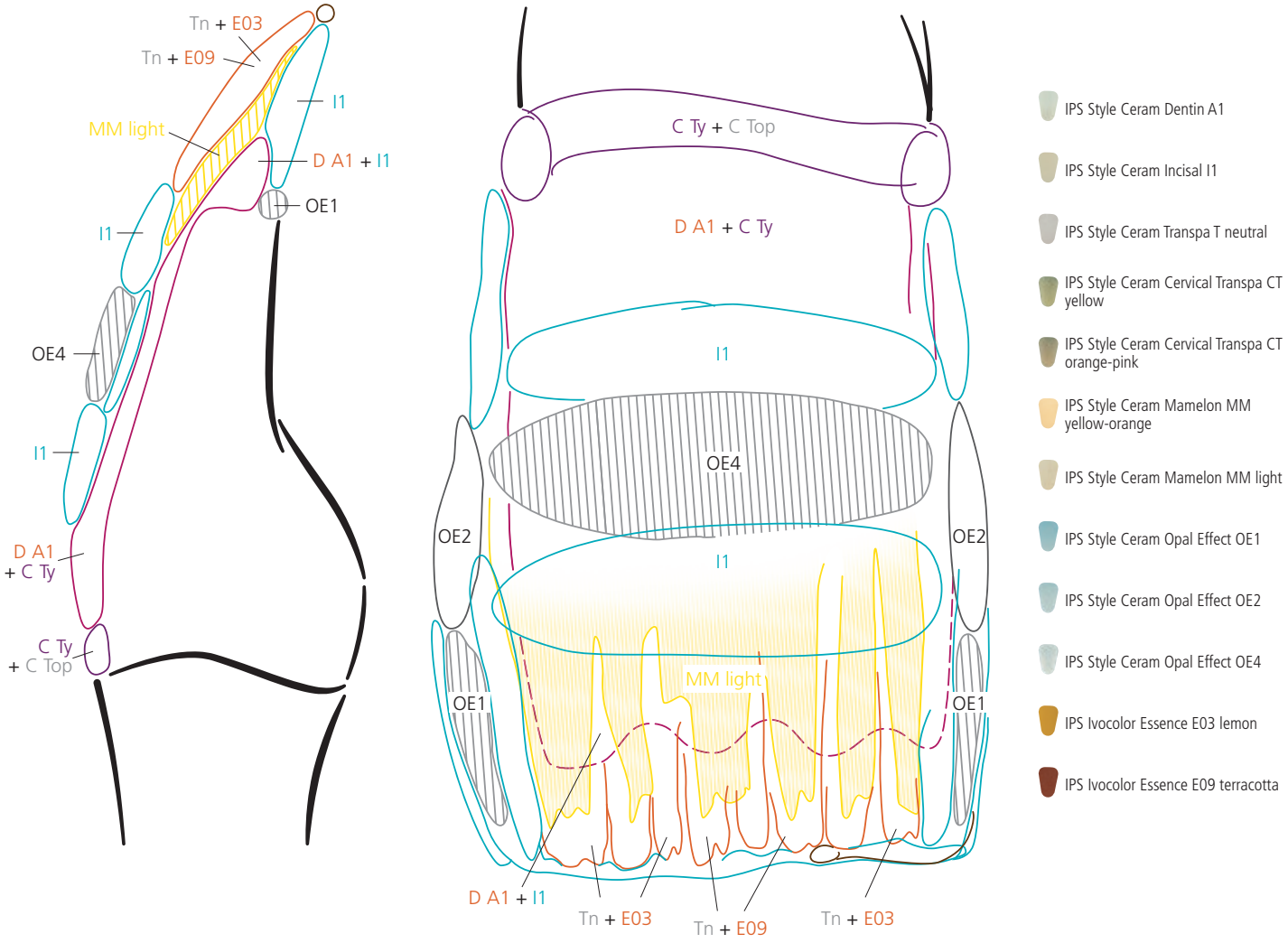
Tip:

In addition to high esthetics, the strength of a material plays an especially important part in veneer work. IPS Style is extremely stable even when used in ultra-thin layer thicknesses. As the metal-ceramic and the IPS e.max all-ceramic are based on the same shade system, both types of material can be used side by side in the same patient without any difficulty.

The layers in detail

To prevent the ceramic from spalling during the second firing cycle, I applied IPS Style Ceram Cervical Transpa CT yellow and IPS Style Ceram Cervical Transpa CT orange-pink to the cervical area after the wash (first firing). I placed an initial layer of IPS Style Ceram Dentin A1, mixed with IPS Style Ceram Cervical Transpa CT yellow, to define the width of the tooth. Then I began with the actual layering procedure by building up an incisal shield (IPS Style Ceram Incisal I1). This method helps me establish the appropriate length of the tooth. At this step, I also imitated the mamelons, using IPS Style Ceram Mamelon MM light. The mamelons were placed to impart the tooth with a lively appearance once the veneer was in situ.

I used an alternating layering technique to build up the incisal area. To reproduce the light-optical properties of the tooth as closely as possible, I used a variety of translucent Impulse materials. I mixed them with small quantities of IPS Ivocolor Essences and applied them in alternating layers in tandem with the IPS Style Ceram Opal Effect materials. In between, I always used IPS Style Ceram Incisal.



The final result

The esthetic requirements placed on a restoration are especially high for veneers in the anterior region. To achieve a beautiful invisible transition between the veneer and the soft tissues, a precise preparation and translucent layering technique are of decisive importance. The preparation margins should be marked beforehand and then accurately reworked under the microscope.

Working on refractory dies is challenging and relatively risky because the result cannot be entirely predicted. On the positive side, refractory dies enable the fabrication of restorations that demonstrate total accuracy of fit and they allow professionals to use any material they want.

Tip:

IPS Style remains stable even during multiple firings and therefore results in highly accurate outcomes when used on a refractory die. The metal-ceramic assists in achieving a tight marginal seal.

Case 2

Straightening misaligned teeth with non-prep veneers

MAKE IT NATURAL.

Initial situation

The patient came to see me because she wanted to have her crooked teeth straightened: tooth 21 was clearly overlapping tooth 11.

As it is our policy to always try and find a treatment that is gentle to the tooth structure, I decided to use a non-prep treatment approach for this case. The idea was to create a harmonious outline without any invasive intervention.

Dentist:
Dr Christian Schult

Case planning/Photographic documentation/
Dental lab work:
MDT Carola Wohlgenannt

I began the planning procedure by compiling a short photographic documentation. It was important for me to provide the patient with a visual impression of the esthetic possibilities of non-prep veneers right from the outset. With this in mind, I prepared individual composite mouldings.

Initial situation

Trying in the composite veneers

Emotional reassurance is crucial in such cases. To win the trust of the patient right from the outset, I first prepared mouldings using the SR Nexco® lab composite. The shade of these mouldings should be as close to the target shade as possible to help the patient imagine what the final result could look like. The advantage of these mouldings was that they enabled me to assess if the final veneers would integrate into the dental arch harmoniously. In contrast to digital before and after simulations, mouldings allow patients to not only see how the veneers would change their esthetic appearance but also to experience what it would feel like to wear them.

Tip:

Before and after comparisons are very helpful to reassure patients emotionally while they are undergoing the treatment.

The layers

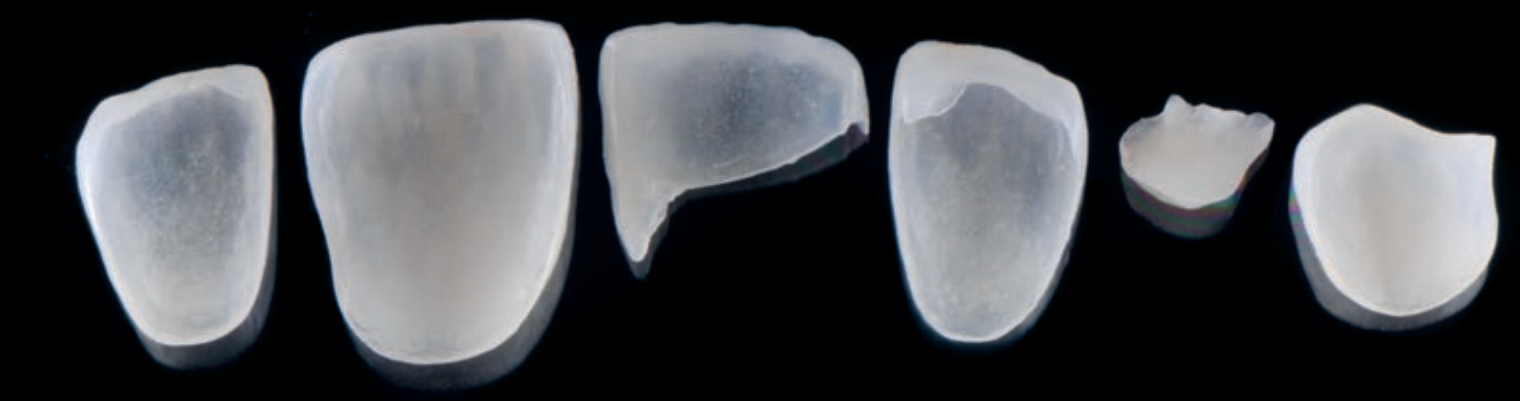
After having applied a thin wash (first firing) using IPS Style Opal Effect OE1, I began to build up the veneer in layers. As usual, I first work on incisor 12 and then on 22 before I completed both anterior teeth.

Tip:

I mix my own blends of materials to create veneers. This way, I can extend the customization possibilities of the existing materials to meet the needs of the individual situation even more closely. The use of refractory dies enables me to meet even the most exacting esthetic requirements of patients with IPS Style. Shade adjustments can be applied using the IPS Ivocolor® stains after the glaze firing.

Master model with refractory dies

The IPS Style veneers show a pleasing esthetic effect already after two firing cycles, even without any additional characterizations. The aim of us dental technicians is to optimally design the incidence of light, colouration, transparency and translucency and, ultimately, the natural appearance of the restoration. However, I only consider a restoration a success if the patient is also happy with it.



Tip:

It is often best to add some translucent material – such as IPS Style Transpa T neutral – to the ceramic material. Under no circumstances should the veneers be layered too opaque.

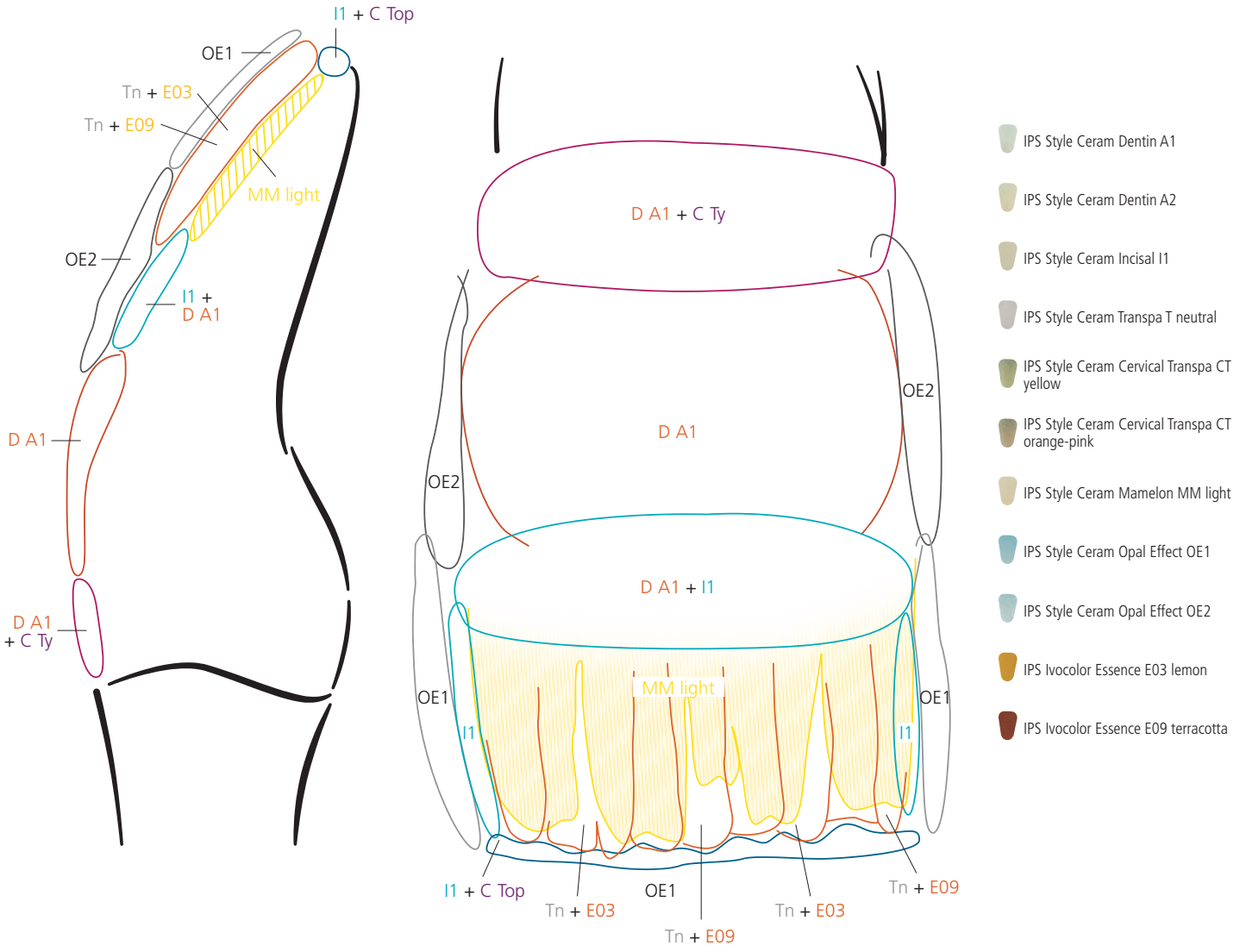
Tip:

IPS Style is very robust and is therefore suited for creating veneers on refractory dies. The metal ceramic is also suitable for ultra-thin layer thicknesses in cases where only limited space between 0.2 mm to 0.7 mm is available.

The layers of the central incisor in detail

Before I embarked on the actual layering process, I provided the dentin body with the requisite brightness value, for which I used pure IPS Style Ceram Dentin A1. As usual, I then began to build up the incisal shield to establish the length of the tooth. Subsequently, I created the outer contours of the veneer, using IPS Style Ceram Dentin A1 and then the mamelons using IPS Style Ceram Mamelon MM light. For the alternating layering technique in the incisal area, I used IPS Style Ceram Transpa T neutral, blended with IPS Ivocolor Essence E03 lemon and E09 terracotta. The latter impart a warm and natural hue. To imitate the halo effect, I employed a small quantity of IPS Style Ceram Cervical Transpa CT orange-pink, mixed with IPS Style Ceram Incisal I1 and Dentin A1. The underlying mamelons lend additional depth and naturalness to the veneer.

To complete the veneer, I covered the entire veneer, starting from the middle section of the tooth, with various translucent Impulse materials, IPS Style Ceram Incisal I1 and IPS Style Ceram Opal Effect OE1 and OE2.



The final result

The ultra-thin and yet highly stable IPS Style veneers were suitable to be inserted as non-prep veneers, as planned. Shortly before placing the veneers, the shade match was assessed. Optically, the veneers blended in with their natural surroundings seamlessly. Once placed, they integrated harmoniously into the dental arch. A great deal of experience is required to place a veneer directly like in this case.

The veneers are very subtle and cannot be seen by the naked eye. Without having to remove any tooth structure, the smile and well-being of the patient has been noticeably improved.

Case 3

Anterior veneers with IPS Style –
Canine build-up with IPS e.max

MAKE IT UNIQUE.

Initial situation

« The patient wished to have more youthful-looking teeth. It was necessary to grind the natural teeth because of the existing fillings. »

Dentist:
Dr Christian Schult

Case planning/Photographic documentation/
Dental lab work:
MDT Carola Wohlgenannt

The layers

To establish the vertical expanse and the segmentation of the incisors, I first created a wax-up. This way, I was able to check the total length of restoration easily after each firing process. It is crucial to keep an eye on the proportions right from the outset.

Tip:

Markings on the model dies allowed me to check the thickness of the materials applied to the veneer as I layered them. I measured the dies before I began to apply the ceramic materials. The markings stayed in place whilst I layered the veneer. This allowed me to check the thickness of the ceramic as I went along and to ensure that I adhered to the minimum thickness.

You may wonder why a ceramist like me happens to be so fascinated by IPS Style. After having completed many cases with this metal-ceramic, I can exactly tell you why: It is the bright brilliance, excellent esthetics and high firing stability that make IPS Style the ideal veneering ceramic for me.

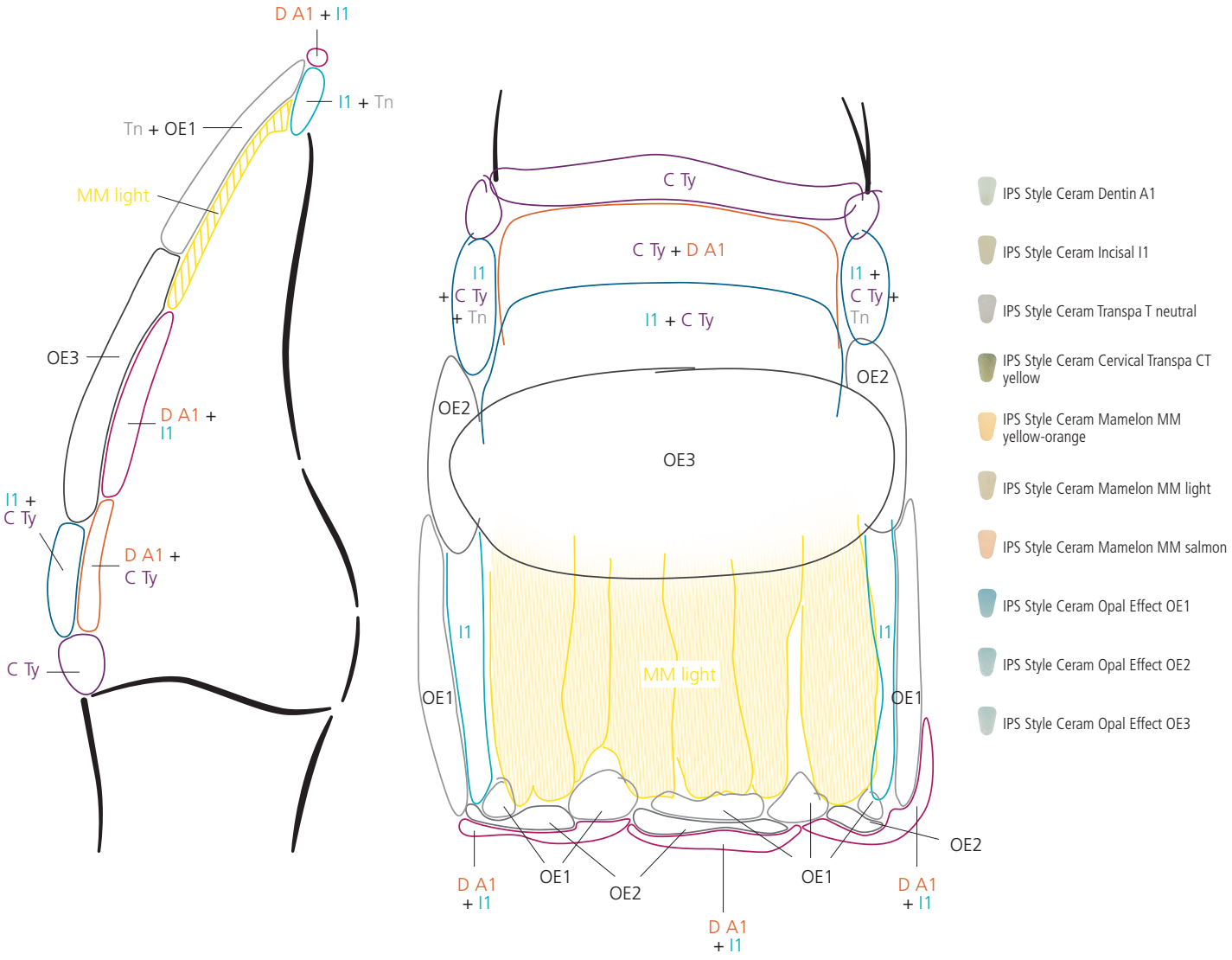
Tip:

There are many things that need to be considered when processing ceramics on refractory dies. Handling is more difficult than handling pressed ceramics. However, the bright brilliance of the results obtained with this method is worth the extra effort. To attain best results, each single working step should be adhered to when creating veneers with IPS Style. In the process, degassing and dewetting the dies is just as important as marking out the marigns correctly and applying a wash (first firing).

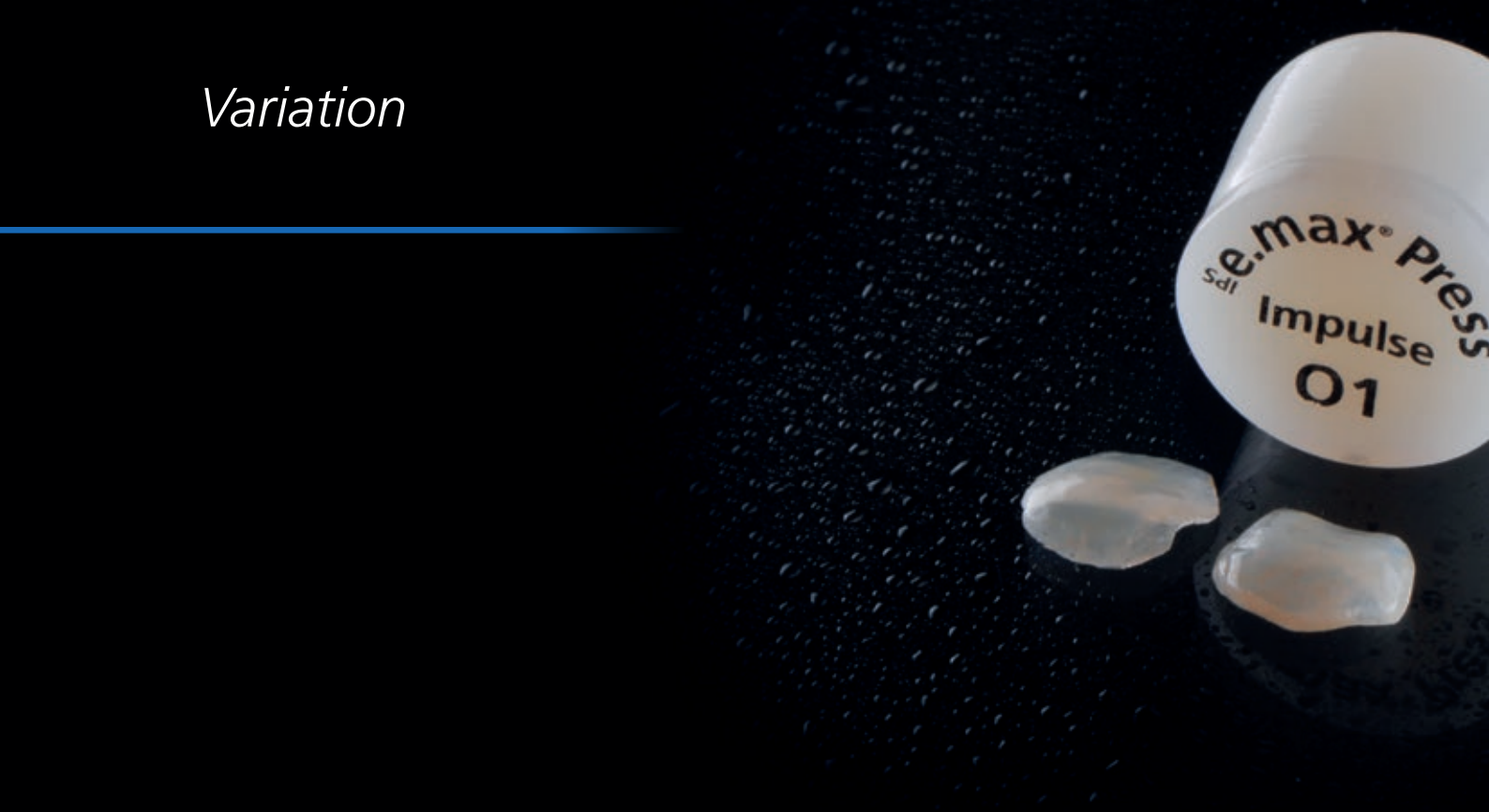
The layers in detail

As usual in these cases, I began by levelling out the margins in the cervical area, for which I used IPS Style Ceram Cervical Transpa CT yellow. In this way, I achieved a smooth transition between the veneer and gingiva. The materials feature a somewhat more intense translucency. Gradually, I incorporated small quantities of IPS Style Ceram Dentin A1. I used IPS Style Ceram Opal Effect OE3 to establish the width of the dentin body in this case. Using IPS Style Ceram Incisal I1, I created the incisal shield, which defines the length of the tooth. The mamelons were imitated using IPS Style Ceram Mamelon MM light, MM yellow-orange and MM salmon. They provide the tooth with structure and naturalness.

I employed an alternating layering technique in the incisal area to achieve optical light reflection effects along the incisal edge and opalescent effects along the mesial and distal zones.
Here, I applied IPS Style Ceram Opal Effect OE1 and OE2 as well as small quantities of IPS Style Ceram Transpa T neutral. In addition, I added a thin layer of IPS Style Ceram Dentin A2 and IPS Style Ceram Incisal I1 to the incisal edge. I then finalized the tooth surface with the Impulse material IPS Style Ceram Transpa T neutral.



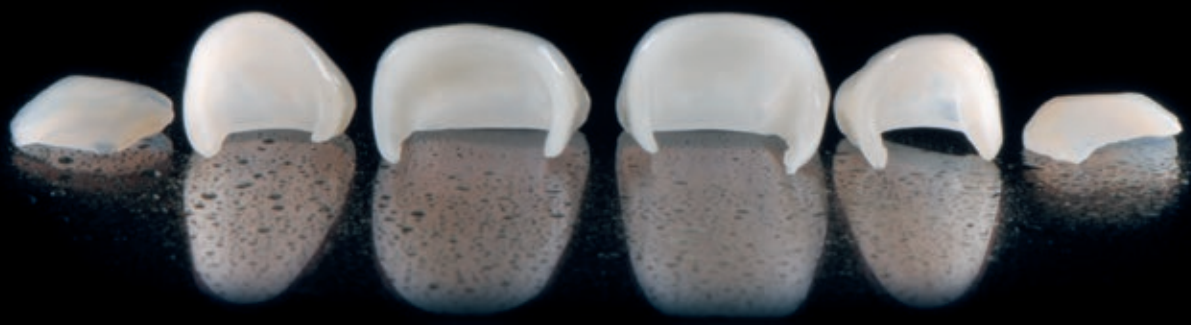
Variation



As already pointed out above, as a ceramist, I find it important to have access to all ceramic materials. This allows me to select the material that meets the specific needs of the individual case. As regards the fabrication of veneers with IPS Style, there is an additional plus that comes into play: I can combine this metal-ceramic with restorations made of IPS e.max Press, because both ceramic systems share the same shade system. Depending on the indication, dentists find it important to offer their patients an alternative material, such as IPS e.max Press, which features increased strength and fracture resistance.

The present case requires the canine guidance to be raised by a build-up. And this is an indication for which I rely on the IPS e.max Press ceramic. The opalescence of the incisal area is important. For this reason, I selected IPS e.max Press Impulse 01. This gave me a perfect match because opalescent materials were also used for the veneers. The possibilities of combining these all-ceramic and metal-ceramic materials are almost limitless.

The veneers made of IPS Style and the canine build-up made of IPS e.max Press perfectly match each other in colour. They are on a par with each other when it comes to opalescence and naturalness – even if in this case I used almost exclusively incisal materials to build up the veneers.



The final result

The canine build-up made of IPS e.max Press and the IPS Style veneers on the anteriors and incisors perfectly harmonized with each other even after having been incorporated. Despite their thin thickness, the veneers looked vibrant and provided an excellent depth effect. The translucent incisal edge enhanced the perception of depth by imitating the reflection of refracted light. I used IPS Style Ceram Dentin A1 and IPS Style Ceram Incisal I1 to achieve the refracted light effect.

My preferred firing protocol

For the wash, cervical and first dentin firings, I always follow the directions given in the IfU of the manufacturer, in this case Ivoclar Vivadent. For the second dentin firing, I usually decrease the temperature by 5 °C. I conduct the glaze firing at 800°C without vacuum, but I decrease the holding time to 10-20 seconds. This way, the surface texture is optimally retained.

It is important to calibrate the ceramic furnace on a regular basis and to adjust it to the ceramic materials being used.

Tip:

You should still see some structure on the ceramic surfaces after the first dentin firing cycle. To have a better idea of what this should look like, you can imagine granulated sugar that is roughly soaked in water: the sugar crystals have already all merged at the bottom, but they can still be seen as separate crystals at the top. If this is the case, the first dentin firing has been carried out correctly and the furnace is set to the correct parameters.

Firing parameters according to Ivoclar Vivadent

IPS Style Ceram (veneering technique)

Veneers layered on refractory dies

Firing temperature **T [°C]**	Stand-by temperature **B [°C]**	Closing time **S [min]**	Heating rate **t↗ [°C/min]**	Holding time **H [min]**	Vacuum on: **V_1 [°C]**	Vacuum off **V_2 [°C]**
Veneer - Wash firing						
810	**403**	**8:00**	**50**	**1:00**	**450**	**809**
Veneer - Cervical firing						
800	**403**	**8:00**	**50**	**1:00**	**450**	**799**
Veneer - Dentin/Impulse firing						
800	**403**	**8:00**	**50**	**1:00**	**450**	**799**
Veneer - Incisal firing						
800	**403**	**8:00**	**50**	**1:00**	**450**	**799**
Veneer - Stain and Glaze firing						
750	**403**	**8:00**	**50**	**1:00 – 1:30**	**450**	**749**

Summary

I – an all-ceramist.
IPS Style – a metal-ceramic.
We – a perfect team.

As a ceramist, I have the advantage to always be able to access the materials that match both the specific needs of the case at hand and the financial means of the patient being treated. Creating veneers on refractory dies is certainly a supreme discipline. However, I find the results that I can achieve with this technique unparalleled in their esthetics. Given its bright brilliance, IPS Style is the right companion for me.

I would like to thank my patients and Dr Christian Schult for their confidence and excellent collaboration. Working together is essential to me to achieve high-quality esthetic restorations.

In my private life, I appreciate nature and all its diversity. I want to reproduce as much of this natural diversity in my restorations as I can. The objective of my work is to achieve esthetic results and, ultimately, to make patients happy. This is what motivates me in my daily work.

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