Obtaining harmonious aesthetic results with two different veneering materials is a considerable challenge that is not without risks. Situations in which dentists are forced to use several different veneering materials that do not adequately satisfy the needs of their customers are determined by biological factors and the financial means of the patients. All the ceramic veneering materials on the market differ in their chemical composition, which is responsible for the final appearance of the restoration. In addition, the influence of the framework material should not be underestimated. If it hinders the transmission of light, the aesthetics of the restoration will be compromised.

So, how do we obtain truly perfect results?

We tend to choose products that can be combined on the basis of their optical compatibility. For this purpose, we often have to rely on the many years of experience we have gained working with materials from different manufacturers. However, we have also found that we can achieve optical compatibility by using products from manufacturers who supply materials that are coordinated in terms of their shade. Manufacturers who focus their efforts on solving the problem of optical compatibility amongst their different materials strive to offer their products in integrated systems.

On the basis of the following case, we would like to demonstrate the manner in which two different materials can be successfully combined. The patient’s teeth #14, 15, 16, 17, 26 and 27 were restored with provisional crowns. For the permanent restoration of these teeth, a combination of all-ceramics (IPS e.max, Ivoclar Vivadent) and PFM ceramics (IPS InLine, Ivoclar Vivadent) was chosen: metal frameworks veneered with the leucite-based feldspathic ceramic IPS InLine were combined with lithium-disilicate glass-ceramic frameworks veneered with the nano-fluorapatite glass-ceramic IPS e.max Ceram.

The patient chose this solution for financial reasons. In the fabrication of the restorations, the specifications of the shade diagram and the recommended layer thicknesses of the individual materials were observed. The latter aspect was of particular importance due to the different shrinkage characteristics of the two ceramics.

The individual IPS InLine and IPS e.max Ceram veneering materials (for example, Dentin, Incisal and Effect materials) not only have consistent designations, but also coordinated shades. Before the metal frameworks in the present case were veneered with IPS InLine, the substrate had to be completely covered with an opaquer layer to mask the metal. The IPS e.max lithium-disilicate frameworks did not require this coating, as the materials for the fabrication of the substructures are available in many different shades and levels of translucency.

Nonetheless, we were able to follow the same shade diagram once we had placed the layer that would mediate the required adhesive bond (after foundation and opaquer firing, respectively). This enabled us to obtain the desired harmonious appearance of the restorations. IPS InLine and IPS e.max Ceram differ slightly with regard to their translucency. However, this aspect is quite useful in the subsequent layering procedure. We attenuated and masked the opaque character of the metal frameworks, while we enhanced the translucent properties of the lithium disilicate by applying the IPS e.max Ceram all-ceramic.

The veneering steps for the two different types of restorations are very similar. In the case at hand, the teeth were waxed up according to the
instructions of the manufacturer: the IPS e.max Press lithium-disilicate frameworks with a minimum final thickness of 0.8 mm and the metal frameworks (Cr-Co alloy) with a thickness of minimum 0.4 mm. Both types of restorations were built up anatomically, that is, with supported cusps and crown margins, in order to obtain an even thickness of the veneers. This detailed wax-up provides the basis for creating restorations with maximum aesthetics and function. Next, the sprues were attached to the wax-ups (Fig. 1).

After the press and casting procedures, the substructures were coated with a wash and opaquer layer respectively in preparation for the subsequent layering procedure. The metal frameworks were completely masked with opaquer (Fig. 2) and shoulder powders were evenly sprinkled onto this layer. The excess was carefully removed. This step improves adhesion and optimises light refraction through the crystals of the Margin material.

This effect attenuates the opaqueness of the PFM restoration. It is clearly visible in the finished restoration.

We followed a similar procedure for the all-ceramic substructures. If the framework had to be (partially) shaded, we used IPS e.max Ceram Shades instead of the opaquer. The remaining surfaces were coated with a thin layer of glazing liquid. Then we used the sprinkle technique to distribute IPS e.max Ceram Dentin over the frameworks. In the fabrication of restorations with lithium-disilicate substructures, the achievement of light scattering is secondary. Rather, the focus for this type of restoration is on adhesion. After firing, the surfaces are slightly rough, which mediates the desired bond between the framework and the layering material.

In the present case, the metal-reinforced crowns were built up first. Owing to the versatility of all-ceramics, the desired harmony with regard to shades and opaqueness is easier to achieve with these materials than with PFM materials. In order to obtain an overall aesthetic result, therefore, the all-ceramic restorations were fabricated last (Fig. 5). Figures 4 and 5 show the finished crowns on the model with the gingival contour. The adhesive luting composite Multilink Automix (Ivoclar Vivadent) was used to cement all the crowns. This luting composite is suitable for the cementation of PFM and all-ceramic restorations.

The present case demonstrates that the combination of PFM ceramics and all-ceramics can produce excellent aesthetic results. Coordinated materials and shade systems make it easy to use different types of ceramics in one restoration and allow materials such as the Effect materials to be used to their fullest effect. With the help of conventional shade diagrams, the desired results can be achieved quickly and easily.