

**Name:**

Matthew Beck

**Group:**

8A-5

**Basic Science Question:**

What is the difference between PFM, zirconia, and lithium disilicate crowns?

**Report:**

**Porcelain-Fused-to-Metal (PFM)**

- Have been the "standard" of full coverage crowns for decades
- Contain an alloy metal core with a layer of porcelain wrapped around it



**Zirconia**

- Zirconium dioxide ( $ZrO_2$ )
- Powdered form of zirconium
- Member of the titanium group
- Two types of Zirconia:
  - **Solid (Monolithic) Zirconia**
  - **High Translucent Zirconia**



**Lithium Disilicate**

- Glass ceramic
- Extremely popular today with the use of computer aided design/computer aided manufacturing (CAD/CAM) technology in dental practice



Porcelain-Fused-to-Metal (PFM)	Zirconia	Lithium Disilicate
<b>Advantages:</b> <ul style="list-style-type: none"> <li>• Great for bridges</li> <li>• Great strength for posterior restorations</li> <li>• Longevity</li> <li>• Cheaper than newer crown materials</li> </ul>	<b>Advantages:</b> <ul style="list-style-type: none"> <li>• Biocompatible</li> <li>• Resistant to fracture</li> <li>• Strongest crown type</li> <li>• Highly esthetic</li> <li>• Variability (Monolithic and High translucency)</li> <li>• CAD/CAM Technology</li> </ul>	<b>Advantages:</b> <ul style="list-style-type: none"> <li>• Very good strength</li> <li>• Highly esthetic</li> <li>• Greater translucency</li> <li>• CAD/CAM Technology</li> </ul>
<b>Disadvantages:</b> <ul style="list-style-type: none"> <li>• Tendency to crack and break between opposing tooth and metal layer</li> <li>• Poor esthetics</li> </ul>	<b>Disadvantages:</b> <ul style="list-style-type: none"> <li>• Toughness of material may lead to friction against opposing teeth</li> <li>• Not ideal when esthetic considerations are very high</li> </ul>	<b>Disadvantages:</b> <ul style="list-style-type: none"> <li>• Tend to fail in the posterior region</li> <li>• Abrasion of opposing enamel</li> </ul>

**References:**

Cho, Aleah, et al. "Comparing Three Ceramic Materials for Digital Dentistry." *Decisions in Dentistry*, 6 Mar. 2020, [decisionsindentistry.com/article/comparing-three-ceramic-materials-for-digital-dentistry/](https://decisionsindentistry.com/article/comparing-three-ceramic-materials-for-digital-dentistry/).

Hong, Kari Ann. "Emax Lithium Disilicate Crowns." *Thousand Oaks Family Dentistry / Thousand Oaks Dentist*, Thousand Oaks Family Dentistry | Thousand Oaks Dentist, 29 May 2014, [www.thousandoaksfamilydentistry.com/blog/2014/5/28/emax-lithium-disilicate-crowns](http://www.thousandoaksfamilydentistry.com/blog/2014/5/28/emax-lithium-disilicate-crowns).

"What Is a Porcelain Fused to Metal Crown?" *Fox Valley Dental*, 9 Jan. 2020, [foxvalleydental.com/what-is-a-porcelain-fused-to-metal-crown/](http://foxvalleydental.com/what-is-a-porcelain-fused-to-metal-crown/).

"Zirconia Crown: Advantages and Disadvantages: Shanti Dental Clinic." *Shanti Dentals*, [shantidentals.com/zirconia-crown-advantages-and-disadvantages/](http://shantidentals.com/zirconia-crown-advantages-and-disadvantages/).