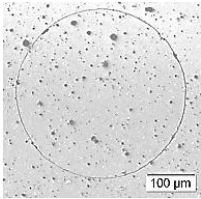
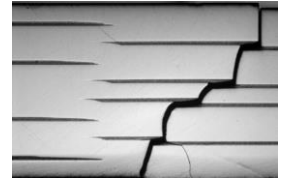


Master's Thesis in the framework of ERC-Grant "CeraText"



Department Materials Science/ Lehrstuhl fuer
Struktur- und Funktionskeramik

Contact Damage on Bioinspired Ceramic Architectures



Mimicking the nature is essential to designing layered ceramic architectures with outstanding mechanical properties, e.g. relatively high toughness, and damage tolerance. To fulfil these requirements several design concepts are possible. For instance, damage tolerance can be achieved by embedding internal layers with in-plane compressive stresses that may deflect propagating cracks and in some cases completely arrest the cracks at the interfaces. The aim of this work is to experimentally study the contact damage on the surface of several ceramic multilayer architectures designed with strong interfaces, tailored residual stresses and microstructure within the layers.

Main tasks:

- Literature research on the topic of contact mechanics and layered ceramics
- Development of an adapted testing equipment to enable surface contact loading by using different indenters in bulk or near edge surfaces.
- Determination of the edge chipping resistance of different multilayer architectures
- Investigation of contact damage by using cross-sectioning and microscopic techniques (study of ring crack formation as well as cone crack propagation)
- Comparison of the results with the ones determined in monolithic ceramics
- Documentation of the thesis (German or English)

Furthermore, the results of this work may be published in a scientific paper.

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Beginning: from December 1st, 2019 or as soon as possible

Duration: approx. 6 months (including writing the master's thesis)

Location: Lehrstuhl für Struktur- und Funktionskeramik, Peter Tunner-Straße 5, 8700 Leoben, www.isfk.at