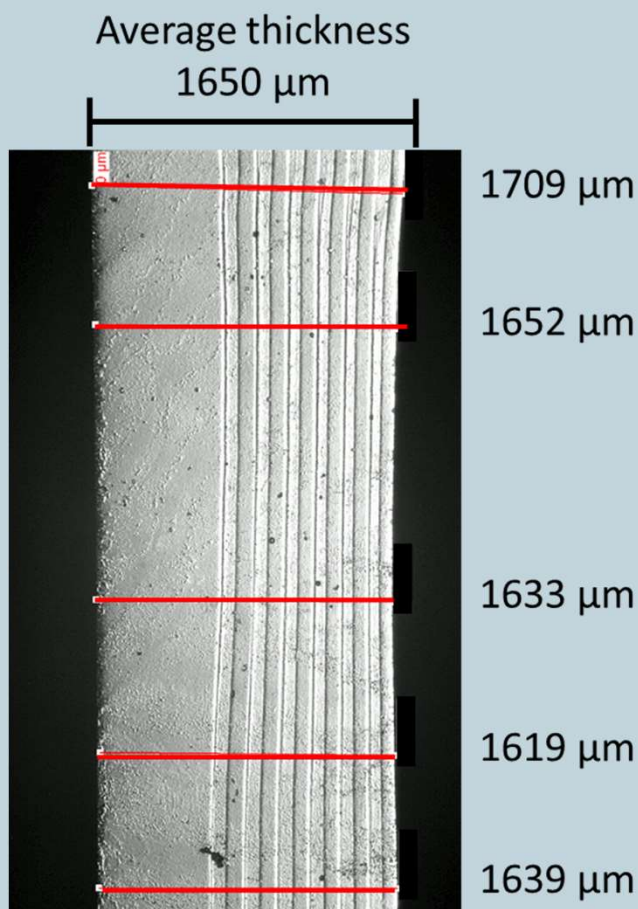


Optimization and new design of an automated EPD set-up to produce multi-layered ceramics



Zirconia materials have found increasing interest for tooth replacements, because of their toughness, biocompatibility and aesthetic appearance. In contrast to teeth, they are prone to brittle fracture despite the inbuilt transformation toughening mechanism of certain zirconia formulations. We investigated possibilities to further increase the toughness of zirconia-based ceramic constructs by implementing hierarchical features into the structure, that were shown to be important for the fracture resistance of teeth. Electrophoretic deposition (EPD), which is an additive manufacturing process, has been shown a very promising method to produce multi-layered zirconia samples.

We would like to automate the EPD manufacturing process, and therefore develop a new machine. Here you come into play, you like to think out of the box and create new ideas for this type of small manufacturing machine. Our goal is to be able to produce samples with up to 75 layers and to have a stable process, where we can reproduce samples with the same parameters.

The scope and focus of the work can be adjusted according to interest.

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