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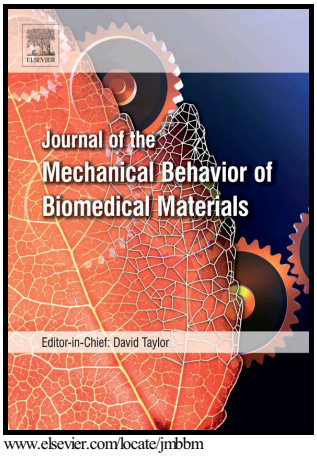

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1. Introduction

In times of digital dentistry the possibility of a quick chairside production process with computer aided design and computer aided manufacturing (CAD/CAM) leads to an increasing demand for monolithic restoration materials (Mehl et al., 2013; Miyazaki et al., 2009; Wittneben et al., 2009). Veneered zirconia has been successfully used for all-ceramic restorations, but delamination of the veneering material from the framework or minor chip-offs often caused failures (Guess et al., 2008; Guess et al., 2011; Kelly et al., 1995; Sailer et al., 2006; Swain, 2009; Tinschert et al., 2005; Zhao et al., 2012). Another reason for ceramic restoration failure are imperfections caused during the manufacturing process. The CAD/CAM technology leads to a more homogenous structure of the milled restorations, when they are cut from standardized fabricated blocks. Using monolithic restorations therefore seems promising to prevent these failures (Kern et al., 2012b). So far highly esthetic monolithic silicate ceramic has been successfully used in inlays, onlays and veneers. However in larger restorations like