

# Microstructural Investigation of Heterogenous Interfaces in BaTiO<sub>3</sub>- Based Multilayer Ceramic Capacitors

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## Abstract

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ABSTRACT

Recent trends in the development of multilayer ceramic capacitors production are focused on miniaturisation, reliability and lowering of the production costs. The development of new ceramic compositions with low sintering temperatures enables the use of Ag/Pd based conductors with high content of silver. In such an alternate structure composed of metal layers and ceramics, the interactions between metal electrode and ceramics as well as diffusion or migration of silver during co-firing can strongly affect the resulting dielectric properties. The interfacial microstructure and cofiring migration between Ag/Pd electrodes and BaTiO<sub>3</sub>-based ceramics with X7R characteristics were studied using transmission electron microscopy and energy dispersive X-ray spectroscopy. Silver migration along the internal electrodes was confirmed by EDS microanalysis. In addition, silver migration via ceramic was also observed. Furthermore, it was confirmed that silver diffusion shows important effects on microstructural development of ceramics during sintering and on the final dielectric properties of the multilayer ceramic capacitors.