

# Global Summit on Electronics and Electrical Engineering

November 03-05, 2015 Valencia, Spain

## Dielectric strength of voidless BaTiO<sub>3</sub> layers with fabricated by aerosol deposition for MLCC application

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BaTiO<sub>3</sub> with perovskite structure is a key material used for electronic devices such as mobile phone, personal computer and electronic passive component due to high dielectric constant and low loss dielectric characteristics. Especially, it has been used as multi-layered ceramic capacitor (MLCC) which is an important passive component in electronic devices. The development trend of MLCC is a miniaturization with an increase in capacitance. Thus, thickness of dielectric layers and internal electrodes in MLCC become thinner for the miniaturization. To date, the highest level of thickness of commercialized MLCC is about 0.6 mm for dielectric layers and 0.5 mm for internal electrodes. However, if the dielectric layer is very thin like this, there are many unexpected problems such as a decrease of dielectric constant, an increase of dielectric dissipation, a deterioration of dielectric strength, and so on. So, many researchers have attempted to solve the unexpected problems which are originated by a decrease in the grain size and the thickness of BaTiO<sub>3</sub> layer but solutions are not investigated yet. Of those, the first thing we have to solve is dielectric strength related to reliability of MLCC. Because if dielectric strength is not good even though other properties are good, MLCC is useless due to short of dielectric layer. Therefore, in this study, we demonstrate the mechanism of dielectric strength of BaTiO<sub>3</sub> layer in nano-scale through various modeling and aerosol deposition process.

### Biography

Hong-Ki Kim was born in Chuncheon, South Korea in 1984. He received the B.S. and M.S. degrees in Electronic Materials Engineering from Kwangwoon University (Korea) in 2010 and 2012, respectively. He attended Ph.D. program in Electronic Materials Engineering from Kwangwoon University (Korea) since 2012. His work includes room temperature based ceramic film deposition, energy storage device fabrication, passive device design and optimization. He has published and submitted more than 30 SCI-indexed papers.

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