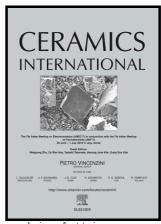
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www.elsevier.com/locate/ceri

PII: S0272-8842(18)30859-9

DOI: https://doi.org/10.1016/j.ceramint.2018.04.001

Reference: CERI17918

To appear in: Ceramics International

Received date: 27 February 2018 Revised date: 18 March 2018 Accepted date: 1 April 2018

Cite this article as: Qinlong Wen, Wancheng Zhou, Hui Gao, Yingying Zhou, Fa Luo, Dongmei Zhu, Zhibin Huang and Yuchang Qing, High dielectric and microwave absorption properties of ultra-thin *1-x*SrTiO_{3-\delta}- *x*SrAl₁₂O₁₉ films, *Ceramics International*, https://doi.org/10.1016/j.ceramint.2018.04.001

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ACCEPTED MANUSCRIPT

High dielectric and microwave absorption properties of ultra-thin 1-xSrTiO_{3- δ}-xSrAl₁₂O₁₉ films

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Abstract

To reduce the thickness of the microwave absorbing materials, we have prepared I-xSrTiO_{3- δ}-xSrAl₁₂O₁₉ ceramics by hot–pressing sintering in the vacuum. The microstructure, dielectric, thermogravimetric analysis and microwave absorbing properties of I-xSrTiO_{3- δ}-xSrAl₁₂O₁₉ were systematically investigated and discussed. The 0.95SrTiO_{3- δ}-0.05SrAl₁₂O₁₉ has high permittivity, the real part is from 1662.2 to 704.9 and the imaginary part is from 208.6 to 12. The absorption bandwidth (reflection loss \leq -5 dB) of 0.95SrTiO_{3- δ}-0.05SrAl₁₂O₁₉ can cover 8.6-12.4 GHz and its thickness is only 0.232 mm which is much thinner than these recently reported by other researchers. For 0.942SrTiO_{3- δ}-0.058SrAl₁₂O₁₉, the peak value of reflection loss is up to -58.5 dB with a thickness of 0.75 mm. The I-xSrTiO_{3- δ}-xSrAl₁₂O₁₉ films could be excellent candidates for highly efficient and ultra—thin microwave absorbing materials.

Keywords: 1-xSrTiO₃₋₈-xSrAl₁₂O₁₉; Ultra-thin; Permittivity; Microwave absorption

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