

Accepted Manuscript

Regular article

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PII: S1350-4495(16)30444-3

DOI: <http://dx.doi.org/10.1016/j.infrared.2016.11.012>

Reference: INFPHY 2176

To appear in: *Infrared Physics & Technology*

Received Date: 1 September 2016

Revised Date: 20 November 2016

Accepted Date: 21 November 2016

Please cite this article as: Y. Ning, W. Wang, Y. Sun, Y. Wu, H. Man, C. Wang, S. Zhao, E. Tomasella, A. Bousquet, Y. Zhang, Tuning of reflectance transition position of Al-AlN cermet solar selective absorbing coating by simulating, *Infrared Physics & Technology* (2016), doi: <http://dx.doi.org/10.1016/j.infrared.2016.11.012>

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Tuning of reflectance transition position of Al-AlN cermet solar selective absorbing coating by simulating

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Abstract:

The reflectance spectra of the Al/double cermet Al-AlN/ AlO_xN_y solar selective absorbing coating are simulated. Two methods have been found to effectively tune the position of reflectance transition of the Al-AlN cermet solar selective absorbing coating, which is crucial to obtain a low emittance at elevated temperature. The position of reflectance transition is mainly determined by the high metal volume fraction (HMVF) cermet layer. It is effectively tuned to shift to lower wavelength by reducing the metal volume fraction or the thickness of the HMVF layer. This provides easy ways to tune the position of reflectance transition.

Keywords: Al-AlN cermet coating; Reflectance spectrum; Metal volume fraction; Layer

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