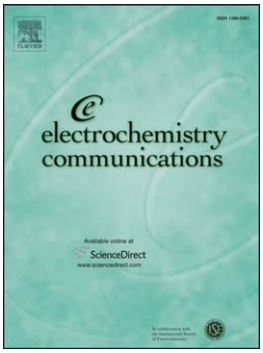

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PII: S1388-2481(15)00219-2
DOI: doi: 10.1016/j.elecom.2015.08.009
Reference: ELECOM 5514

To appear in: *Electrochemistry Communications*

Received date: 30 June 2015
Revised date: 6 August 2015
Accepted date: 10 August 2015

Please cite this article as: Yanxiang Zhang, Yu Chen, Mufu Yan, Fanglin Chen, New formulas for the tortuosity factor of electrochemically conducting channels, *Electrochemistry Communications* (2015), doi: 10.1016/j.elecom.2015.08.009

New formulas for the tortuosity factor of electrochemically conducting channels

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Abstract

Porous composite mediums consisting of multiple interpenetrating percolating phases are widely used in electrochemical cells and batteries. The electrochemical species, for example electrons, ions, and gaseous molecules, are confined to transport within the specific conducting phase networks. Our ability to understand physical and chemical processes within these tortuous networks is often limited by the lack of suitable mathematical representation of their tortuosity factor. Thus, the quantitative formulation of tortuosity factor is urgently needed in this regard. From purely