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Enhancing the Electronic Conductivity of Vanadium-tellurite Glasses by Tuning the Redox State

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Abstract

Transition metal oxides are used in a variety of electronic purposes, e.g., vanadium tellurite as cathode material in high-power demanding batteries. By tuning the redox state of vanadium, it is possible to achieve a lower internal resistance within the entire battery unit, thus a higher capacity. In this work we vary the redox state of a given vanadium tellurite system by performing post heat-treatment in controlled atmosphere. This process is in theory not limited only to varying electronic conductivity, but also varying the glass structure, and hence, changing properties of the glasses, e.g, thermal and mechanical properties. Finally we give insight into the relation between the redox state and electronic conductivity.

Symposium 12: Advances in Electroceramics

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