Nonlinear Energy and Charge Transport in Silicates. Experiments and semiclassical models.

Juan F.R. Archilla[1,*], Jānis Bajārs[2], Yusuke Doi[3], Masayuki Kimura[4]

[1]Universidad de Sevilla, Sevilla, Spain, [2]University of Latvia, Riga, Latvia
[3]Osaka University, Osaka, Japan, [4]Setsunan University, Osaka, Japan
E-mail[*]: archilla@us.es

Abstract: Experiments with silicates bombarded by alpha particles show the transport of charge and energy without the need of an electric field, the energy and momentum provided by the alpha particles. We construct two semiclassical models to model the observed phenomena, a phenomenological one, used as a test model to develop and refine the theory, and other obtained from physical principles and empiric potentials. For the latter the propagation of charge is difficult to achieve, but there are exact neutral excitations, transporting energy. We also present provisional results on the thermalized lattice.

Keywords: Nonlinear excitations. Charge transport. Energy transport. Semiclassical lattices. Silicates.

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