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Effects of relaxation on the energy landscape of amorphous silicon HOUSSEM KALLEL, NORMAND MOUSSEAU, FRANCOIS SCHIETTEKATTE, Departement de physique and Regroupement quebecois sur les materiaux de pointe, Universite de Montreal. — Amorphous silicon is used in many devices around us, included as a thin-film transistor in most flat screens, it also serves as the reference for the study of disordered network systems. Recently, differential scanning calorimetry and nanocalorimetry measurements (DSC) [1] have shown that the heat released as the temperature of the sample is raised following implantation, is temperature independent. To understand this behaviour, we characterize the energy landscape of model *a*-Si. Using the activation-relaxation technique (ART nouveau) with the modified Stillinger-Weber potential, we generate models at four levels of relaxation and identify the relaxation mechanisms by analysing 100 000 events for each model. We find that while the distribution of the activation barriers shifts to higher energy as the system is relaxed, the distribution of the relaxation energies is almost unchanged. The relation between these two phenomena is consistent with the DSC measurements. This work is supported, in part, by NSERC, FQRNT and the CRC Foundation. HK is grateful for a scholarship from the Tunisian Ministry of Higher Education, Scientific Research and Technology.

[1] R. Karmouch *et al.*, Phys. Rev. B **75**, 075304 (2007)

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