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Low temperature adsorption of 3He on silica aerogel surface and its influence on 3He spin kinetics

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Abstract

Significant influence of the aerogel surface heterogeneity on the processes of 3He nuclear magnetic relaxation at temperatures 1.5 - 4.2 K is discovered. This influence appears, for instance, in differences of the 3He T 1 relaxation times for small portion of 3He, adsorbed at different temperatures. Binding energy data of 3He and distributions of this energy in two types of aerogel were obtained experimentally. Adsorbed 3He molecules with binding energies 60 - 250 K play supreme role in processes of nuclear magnetic relaxation of gaseous and liquid 3He in aerogel.

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