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# A high-pressure, clinopyroxene-structured polymorph of albite in highly shocked terrestrial and meteoritic rocks

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## Abstract

Clinopyroxenes with excess Si have been described in run products from high-pressure experiments and inferred to have existed in nature from retrograde transformation phases. Here, we present the discovery of albitic jadeite, $(Na,Ca,\square_{1/4})(Al,Si)Si_2O_6$—the first natural, sodic clinopyroxene with excess Si occupying the octahedral cation site, M1, and a corresponding ¼ vacancy on the M2-site in the Ries impact structure and in a suite of L6 ordinary chondrites, EET 13014, EET 13052, NWA 1662, and TIL 08001. Garnet compositions in these samples indicate shock pressures of 18–22 GPa. Based on our survey, albitic jadeite is likely to be rather common in terrestrial and meteoritic shock-metamorphic environments. Shock-generated jadeite should be reexamined with respect to excess Si.

**Keywords:** Albitic jadeite, $(Na,Ca,\square_{1/4})(Al,Si)Si_2O_6$, high-pressure clinopyroxene, shock-induced phase, Ries impact structure, L6 ordinary chondrites