Packungsdichte und Wertigkeit von Lithium und Natrium unter Druck

Packing Density and Valence of Lithium and Sodium under Pressure

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The volume changes of lithium and sodium under pressure are discussed with respect to the packing density of the atoms and their valence. In densely packed Li I (bcc), Li II (fcc), and Li III (α-Hg type), valence increases from 1 at $\approx$ 5 GPa to $\approx$ 2.5 at 40 GPa. The maximum valence 3 is attained in Li IV (body-centered cubic, 16 atoms per cell, packing density q = 0.965) at 47 GPa. In densely packed Na I (bcc) a linear increase of valence from 1 at $\approx$ 10 GPa to 2.9 at 65 GPa is found which continues in Na II (fcc) up to 4.1 at 103 GPa.

Key words: Lithium, Sodium, High Pressure, Packing Density, Valence