

ANASAZI **NUCLEI SERIES**

LITHIUM-6&7

⁶Li PROPERTIES

- 7.42% natural abundance
- Spin 1, quadrupolar
- Chemical shift range
 25 ppm

⁷Li PROPERTIES

- 92.58% natural abundance
- Spin ³/2, quadrupolar
- Chemical shift range
 25 ppm



DID YOU KNOW?

Some atomic weapons exploit the properties of the lithuim-6 nuclei. Because of the scale of industrial lithium-6 extraction, commercially available lithium is often enriched in lithium-7.

Lithium also has great utility in synthetic chemistry as part of organolithium reagents. For example, the carbon nuclei in a lithium carbon bond is nucleophilic and can add across a double bond creating a new carbon-carbon bond. The 1963 Nobel Prize winning chemist Karl Ziegler was a key contributor to organolithium chemistry.

Lithium is now one of the best know elements due to the ubiquity of lithium-ion batteries. John B. Goodenough, M. Stanley Whittingham, and Akira Yoshino won the 2019 Nobel Proze in chemistry for their contributions to the development of rechargeable lithium-ion batteries.

What can you do with ^{6,7}Li NMR?

Study lithium ion solvation to optimize advanced inorganic materials for battery technologies. Measure J(^{6,7}Li ,X) coupling constants to determine structure and connectivity of organolithium reagents.



R.K. Harris et.al. Pure Appl. Chem., Vol. 73, No. 11, 2001

RECOMMENDED LITERATURE

H. Günther in *Encyclopedia of Nuclear Magnetic Resonance*, John Wiley & Sons, Inc., Chichester, 1996; Vol. 5, 2807-2825. C. Detellier in *NMR of Newly Accessible Nuclei*, Academic Press, New York, 1983; Vol. 2, 105-151