

ABOUT LITHIUM BATTERYS — CAPACITY LOSS

No, not the hazard warnings this time. Eut Tileston passed along this information, some of which was new to many of us.

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Gilbert N. Lewis pioneered lithium batteries in 1912; the first nonrechargeable cells were created in the early 1970s. The first commercial lithium ion battery was created by Sony in 1991, following research by a team led by John B. Goodenough.

Advantages and disadvantages

The immediate advantage to Lithium battery chemistry is higher charge density. Li ions are small and mobile, but more readily stored than hydrogen. Thus a battery based on Li is smaller than one with hydrogen, such as a NiMH or NiCd, and with fewer volatile gases. Because the ions need fewer storage intermediaries, more battery weight is usable as charge, instead of overhead. Thus, Li batteries are lighter than equivalents in other chemistries - often much lighter.

The Li-ion battery does not lose quality when recharging during laptop use; it is capable of easily regulating back and forth movement of energy from powercell to powercell. A unique drawback of the Li-ion battery is that its life cycle is dependent upon aging from time of manufacturing (shelf life) regardless of whether it was charged, and not on the number of charge/discharge cycles. This drawback is not widely publicized. As a newer chemistry, with more advanced applications, Li batteries command a higher price.

The Li-ion battery required nearly 20 years of development before it was safe enough to be used on a mass market level. While Li-ion batteries do not suffer from the memory effect, they are not as durable as NiMH or NiCd designs and can be extremely dangerous if mistreated. At a 100% charge level, a typical Li-ion laptop battery that's full most of the time at 25 degrees Celsius, will irreversibly lose approximately 20% capacity per year. This capacity loss begins from the time it was manufactured, and occurs even when the battery is unused.

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