

Asahi Kasei Europe GmbH
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Akira Yoshino received the Japan Prize 2018

Düsseldorf, September 19, 2018 – Asahi Kasei Honorary Fellow Dr. Akira Yoshino has been awarded by the Japan Prize Foundation with the 2018 Japan Prize, in the field of Resources, Energy, Environment and Social Infrastructure, in recognition of his significant contributions to the development of the lithium-ion battery (LIB). The award ceremony was held in Tokyo on April 18, 2018.

The commercialisation of the rechargeable lithium-ion battery was driven forward in the early 1990s by Sony and a joint venture between Toshiba and Asahi Kasei. The lithium-ion battery opened the path for mobile electronic devices such as smartphones or notebooks to spread rapidly worldwide and, with its application in electromobility, represents an important future technology for the automotive industry as well. Mobility in everyday life would be impossible without the successful commercialisation of this technology. By combining existing and original technologies, Dr. Akira Yoshino made the lithium-ion battery possible in its current form in 1985.

With the spread of mobile electronic devices such as the Sony Walkman from the 1970s, the need for lightweight and compact rechargeable batteries to replace the common and non-rechargeable primary cells increased. Lithium was identified early on as a powerful anode material for rechargeable batteries. However, the easy inflammability and susceptibility to short circuits with the cathode posed great challenges to science and for a long time prevented the practical use of lithium-ion batteries.

Dr. Yoshino invented a completely new combination of carbon (C) for the negative electrode and lithium cobalt oxide (LiCoO_2) for the positive electrode, developed the fundamental technology for the LIB which uses aluminum as positive current collector material, and fabricated the world's first LIB cell. He also developed other technologies that were essential for the successful commercialization of the LIB, including technology for fabricating electrodes, technology for assembling batteries, and other technology that made the LIB possible as a small, lightweight rechargeable battery.

Dr. Yoshino was chosen for the Japan Prize in recognition of his original and breakthrough accomplishments that formed the technological and industrial foundations of the LIB.

Awarded annually since 1985, the Japan Prize is a prestigious international award presented to individuals whose original and outstanding achievements are not only scientifically impressive, but have also served to promote peace and prosperity for all mankind. The Japan Prize Foundation was created by the government of Japan supported by a personal donation

from the late Mr. Konosuke Matsushita, founder of Matsushita Electric Industrial Co., Ltd. (now Panasonic Corp.) in 1982.

Akira Yoshino was born on January 30, 1948 in Fujisawa, Kanagawa Prefecture, Japan. From 1970 he studied chemistry at the University of Kyoto. Parallel to beginning his master's degree in chemistry, he joined Asahi Kasei in 1972. He received his doctorate in engineering from the University of Osaka in 2005.

After joining Asahi Kasei in 1972, Akira Yoshino worked for many years in the laboratory in Kawasaki before being appointed Head of the Ion Battery Development Department in 1992. After further positions as Head of the Ion Battery Group and the Development Department for Battery Materials, he became General Director of the Yoshino Laboratory named after him at Asahi Kasei in 2005.

Since 2010 Akira Yoshino is Head of the Lithium Ion Battery Technology and Evaluation Center (LIBTEC). In 2017 he was appointed professor of the Scientific and Technical College at Meijo University in Tokyo. In the same year, he became Honorary Fellow at Asahi Kasei.

With his experiments and the combination of existing and proprietary technologies, Akira Yoshino was able to prove the practical application of the lithium-ion battery. His contributions also enabled the following characteristics of the battery:

- Light, compact and space-saving design
- High cell voltage of 4 volts and more
- Low self-discharge rate
- High-current capability

Akira Yoshino is an honorary research fellow at Asahi Kasei and head of the Lithium Ion Battery Technology and Evaluation Center (LIBTEC) and is actively involved in the further development of lithium-ion battery technology even after retirement.

Contributions to the development of the lithium-ion battery (excerpt):

- 1999: *Chemical Technology Prize*
Chemical Society of Japan
- 2004: *Medal with Purple Ribbon*
Japanese Government
- 2012: *IEEE Medal*
The Institute of Electrical and Electronics Engineers (USA)
- 2013: *Global Energy Prize*
The Global Energy Association (Russia)
- 2014: *Charles Stark Draper Prize*
The National Academy of Engineering (USA)
- 2016: *NIMS Award*
National Institute for Materials Science (Japan)
- 2018: *The Japan Prize*
The Japan Prize Foundation

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“Creating for Tomorrow”. With this slogan, the Asahi Kasei Group refers to the common mission of all its companies, to help people across the world towards a better life and living with sustainable products and technologies. You can find further information at

<http://www.japanprize.jp/en/index.html>

www.asahi-kasei.co.jp/asahi/en/

<https://www.asahi-kasei.eu/>

Asahi Kasei – Special site on Dr. Akira Yoshino

<http://www.asahi-kasei.co.jp/asahi/en/yoshino/>

Asahi Kasei – Interview with Dr. Akira Yoshino

http://www.asahi-kasei.co.jp/asahi/en/r_and_d/interview/yoshino.html

The Japan Prize Foundation – Laureate Dr. Akira Yoshino

http://www.japanprize.jp/en/prize_past_2018_prize01.html

The Japan Prize Foundation (YouTube) – Video about Dr. Akira Yoshino

<https://www.youtube.com/watch?v=fRsgKiX5mM>

Bloomberg – Interview (December 2017)

<https://www.bloomberg.com/news/articles/2017-12-26/autonomous-cars-need-tougher-batteries-lithium-ion-pioneer-says>