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December 8, 2025

Company name: Focus Systems Corporation

Joint research with the University of Tsukuba on “Tertiary batteries, IoT Devices” Granted Patent

We hereby announce that the patent application*1 for "Tertiary batteries*2, IoT Device," which was jointly filed with the University of Tsukuba (based in Tsukuba city, Ibaragi prefecture; President: Kyosuke Nagata; Research representative: Yutaka Moritomo, professor of materials science and engineering), has been officially granted.

*1 "Tertiary battery, IoT Device" (Japanese Patent Application No. 2021-057972 [Filed March 30, 2021])

*2 A tertiary battery is a battery that is charged by a slight change in temperature, utilizing the difference in the temperature coefficients of the oxidation-reduction potentials of the positive and negative electrodes. Unlike a secondary battery, which is charged by electric power, a tertiary battery is charged by environmental heat.

Overview of the Patent

- Patent Number No. 7781384
- Registration Date November 28, 2025
- Issue Date December 8, 2025
- Title of the Invention Tertiary battery, IoT Device
- Patentee The University of Tsukuba,
Focus Systems Corporation

(Related Release)

2019/03/26 <https://en.focus-s.com/news/20190326-E.pdf>

University of Tsukuba and Focus Systems Initiate "tertiary battery" Joint Research Development of a Safe, Low-Cost, Innovative Battery with Power Generation Function

2019/12/23 <https://en.focus-s.com/news/20191223.pdf>

Announcement Regarding the Publication of a Research Paper on Tertiary batteries

2020/02/06 <https://en.focus-s.com/news/20200206-E.pdf>

Tertiary Batteries Utilizing Phase Change Material Successfully Achieve Higher Voltage -Toward Realizing Independent Power Supplies Charged in a Thermal Environment Near Room Temperature-

2021/06/14 <https://en.focus-s.com/news/20210614-E.pdf>

Moving forward with research development of "tertiary batteries" for the future of "battery-free IoT devices" -A patent application and verification tests of a next-generation power supply bringing us closer to a carbon-neutral society -

About Focus Systems

Focus Systems Corporation was founded in 1977 and is not only involved in system development and operation in public and communications sectors and other highly socially relevant fields but is also actively promoting business development with an eye on the trends of the times, such as IoT, cloud computing, and AI. Our corporate slogan is "TECH with HEART" This embodies the passion and sincerity with which each employee approaches their work at Focus Systems, which connects people through technology.

HP: <https://en.focus-s.com/>

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