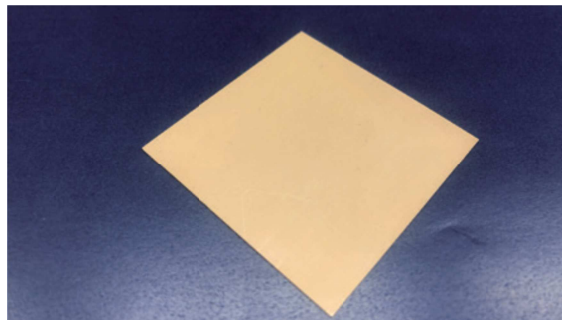


## Denka Developed a New Heat Dissipating Substrate Enabling Dissimilar Metals to be Joined for xEV ~Introduced during Highly-Functional Material Week~

Denka Company Limited (headquarters: Chuo-ku, Tokyo; president: Manabu Yamamoto; hereinafter, “Denka”) has developed a boron nitride<sup>1</sup> resin composite board (hereinafter, “BN resin composite substrate”) that enables dissimilar metals to be joined, as a new heat dissipating substrate for xEV.<sup>2</sup> The new substrate is being unveiled at Highly-functional Material Week, which starts at Makuhari Messe.



<BN resin composite substrate>

The BN resin composite substrate is a base material mainly used for power modules<sup>3</sup> to control motor drive converters installed in xEV. Taking advantage of the properties of the highly functional boron nitride (BN) ceramic, such as good thermal conductivity and electrical insulation, and by combining it with an adhesive resin, Denka has achieved the joining of dissimilar metals, including thick copper, to the front and back of substrate s, something that was difficult with conventional heat-dissipating substrate s. This is expected to lead to improvements such as smaller and lighter power modules of various materials and better thermal conductivity. Denka is also able to change the proportion of resin and BN to adjust thermal conductivity depending on customer requirements, enabling customers to design flexibly.

Denka is focusing its efforts on the field of the environment and energy, specifically on 5G and xEV, as part of its actions to accelerate the growth of specialty businesses in the shift of its business portfolio stated in the Denka Value-Up management plan. Moving forward, Denka will continue to develop new materials including new functional ceramics, LCP films, and low dielectric materials.

<sup>1</sup> Boron nitride

A functional ceramic, it is a white powder with a scaly crystal structure.

It has various properties such as thermal conductivity and electrical insulation, and is used as an insulation heat dissipating material filler, in semiconductor manufacturing equipment parts, and as an insulation material in high temperature reactors.

<sup>2</sup> xEV

General term for battery electric vehicles (BEV), hybrid electric vehicles (HEV), plug-in hybrid vehicle (PHEV/PEV), and fuel cell vehicles (FCEV/FCV)

### <sup>3</sup> Power modules

A module that integrates power related circuits containing power semiconductors to control and supply a power source (power). It is used in equipment including home appliances such as air conditioning, communications base stations, and motor drive converters for automobiles.

### **About Denka**

Denka is a chemical manufacturer headquartered in Chuo-ku, Tokyo. The company specializes in developing business activities on a global scale across a wide range of fields, from inorganic and organic chemicals, to electronic materials and pharmaceuticals. Founded in 1915, Denka has steadily continued to develop and manufacture products that contribute to the development of society by fully utilizing its unique concepts and technological capabilities. Upholding its corporate slogan, “Possibility of chemistry” the company and its president, Manabu Yamamoto, are committed to contributing to the sound development of the society while sincerely tackling the challenges that the society is now confronting.

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