

Toyota Develops 'Diamond-like' Semiconductor Wafer to Boost Hybrid Mileage

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Toyota City, Japan – Toyota is using one of the hardest materials in nature after diamonds to develop a semiconductor it hopes will improve the fuel efficiency of its hybrids, such as the Prius, by as much as 10 percent.

The company and its partners announced today that they have developed a silicon carbide (SiC) power semiconductor for use in automotive power control units. Toyota plans to begin test-driving vehicles with the technology on public roads in Japan within a year.

The semiconductor wafers, made from carbide – one of the hardest materials in nature, theoretically have superior characteristics such as one-tenth the electrical power loss and 10 times the drive frequency. Toyota said the technology would also allow it to reduce the size of current automotive power control units by 80 percent.

The automaker said it has already achieved a 5 percent improvement in fuel efficiency in test vehicles and aims to commercialize the technology by 2020.

The new SiC power semiconductors, along with [improved engines](#) and aerodynamics, are key steps the company is taking to continue advancing hybrid powertrains, a technology it pioneered nearly 17 years ago.

For more information, [click here](#).