

EXTREME
CLOSE-UP

SUPER CHARGED

A new lithium-ion battery fills up fast and outlasts most gadgets

THE SHARPEST PART of DeWalt's DC300K cordless circular saw isn't the blade; it's the new M1 Nanophosphate battery inside. It recharges in minutes (rather than hours) and lasts a decade (instead of a couple years).

Traditional lithium-ion batteries use bits of metal oxide **[A]** to store energy, but it takes a while for lithium ions **[B]** to diffuse into these relatively large particles. The M1, developed by A123Systems, charges faster by instead using tiny specs of iron phosphate **[C]** to quickly absorb ions. The easier movement of ions means less wear and tear and a longer lifetime for the battery. Plus, it's less prone to exploding. While charging, standard lithium-ion batteries heat up and release oxygen—fuel for fire—at around 300°F. The M1's iron phosphate has been tested at about 480° (far hotter than the batteries are likely to get) without shedding any oxygen.

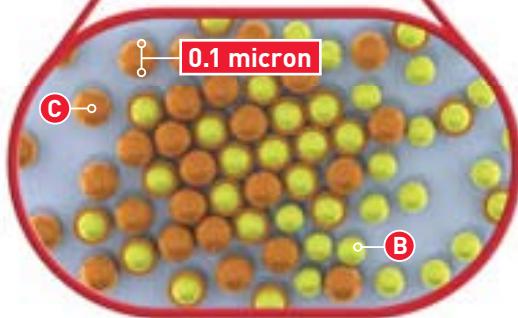
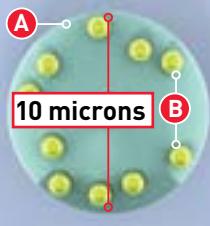
That's good for power tools, but the M1's biggest promise is in spinning tires, not saw blades. Plug-in cars haven't caught on because they take hours to recharge. But an auto with M1s could reach 80 percent of charge capacity in just five minutes—making it as fast to refuel as a conventional car.

—CHRISTOPHER NULL



GET IT: \$380;
dewalt.com

STANDARD LITHIUM-ION CHARGING



THREE MORE BATTERY-BOOSTING TECHNOLOGIES

CAP-XX SUPERCAPACITORS

Future cameraphone flashes could light up entire rooms, thanks to supercapacitors, which use nanoscale carbon grains to both store big bursts of electricity and release them over longer periods. Supercapacitors power the Intermec CN3 smartphone's flash and also run the device while you change the battery.



MEDIS 24/7 POWER PACK

Medis's new disposable fuel cells can power an iPod for 60 hours and—the company hopes—even go on the plane with you. Medis replaced methanol fuel with a far less flammable mix of sodium borohydride and alcohol and packed it in a sealed container that can't spill. The company plans to sell the units later this year for \$20.



ZINC MATRIX POWER BATTERIES

Brand-new silver-zinc batteries can hold more power than lithium-ion cells. But with each discharge, some of the zinc oxide dissolves into a useless blob. Zinc Matrix Power claims to have solved the problem by stabilizing the zinc particles in a polymer matrix. Its batteries could be in laptops by next year.

