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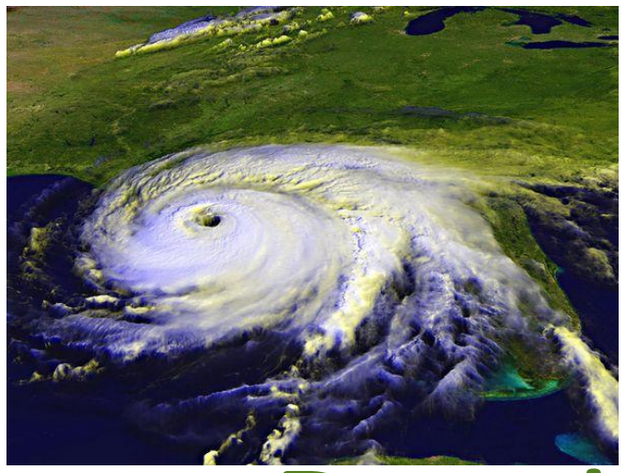

Novel High Energy Density Dielectrics for Scalable Capacitors

September 27, 2016

Harlan Brown-Shaklee, PhD

U.S. DEPARTMENT OF ENERGY

National Nuclear Security Administration

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We are focusing on reliable passive components for inverter modules

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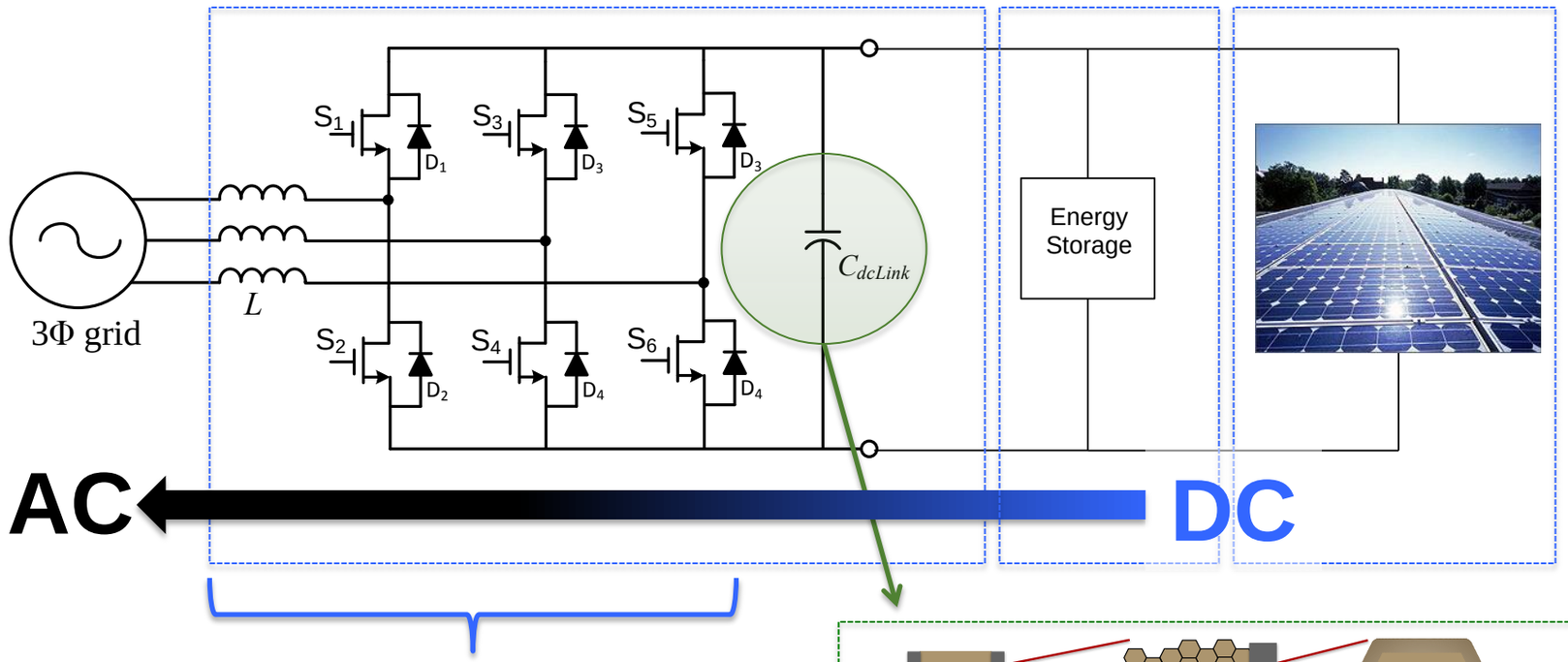
Wide Band Gap (WBG) Power Module

Firming

Renewables

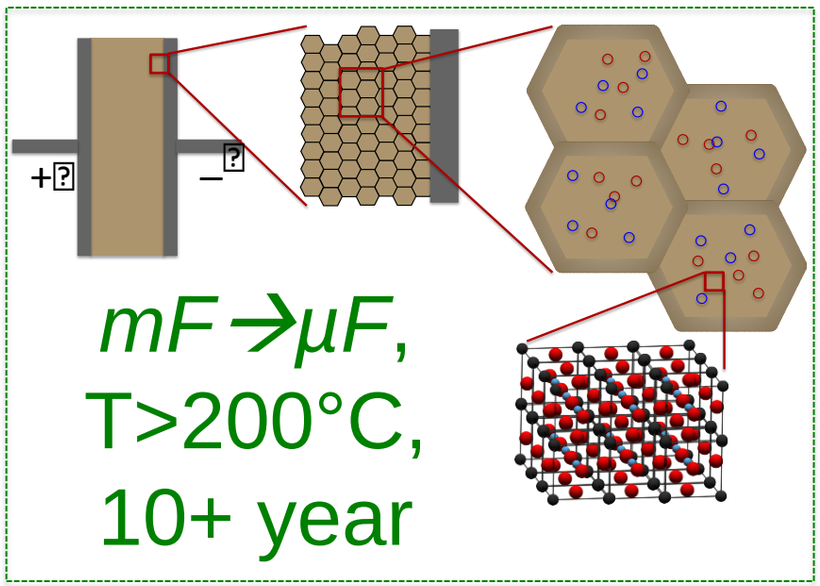
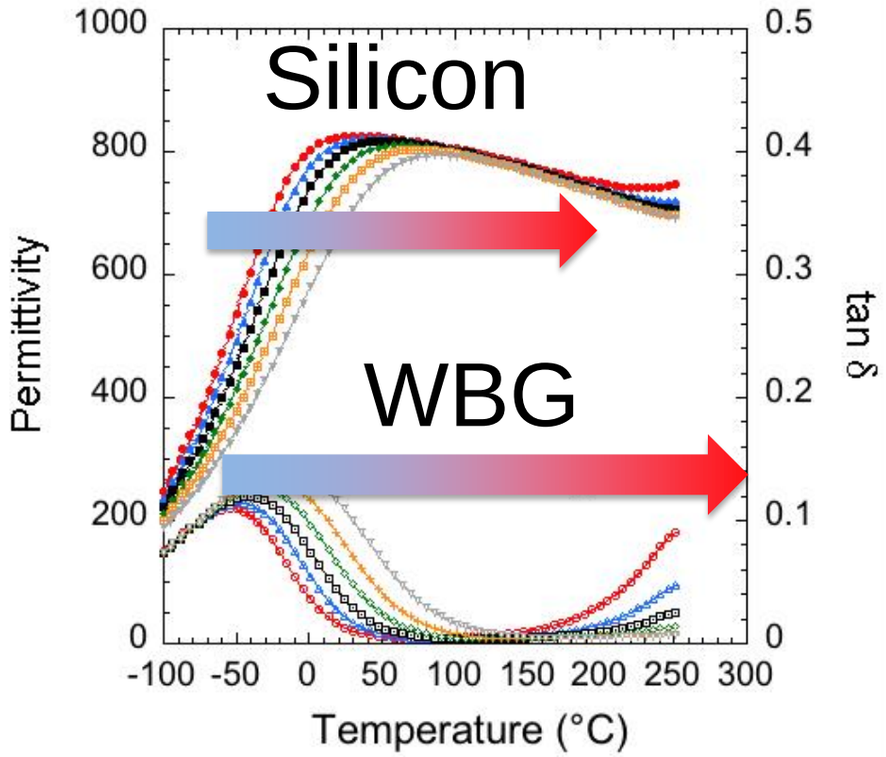
GOAL

New capacitors are required to meet operation targets of WBG modules



SiC and GaN based power modules operate T>200°C and >20kHz

GOAL f>1MHz



mF→μF, T>200°C, 10+ year