**SENSOR** SMART EMBEDDED NETWORK OF SENSORS WITH OPTICAL READOUT

**BENEFITS:**
- Provides accurate measurement of a battery’s State of Charge (SoC) and State of Health (SoH)
- Mitigates oversizing and over-engineering of battery packs
- Improves operational safety
- Hair-thin, lightweight fiber-optic (FO) sensors are embedded into each cell to directly measure SoC and SoH parameters.

**TECHNOLOGY ENABLERS:**
- **EMBEDDED FIBER OPTIC SENSORS**
  - EV-grade FO-embedded cells fabricated
  - Measurable parameters include temperature, strain and pressure, and chemical composition

- **NOVEL OPTICAL SENSING READOUT**
  - Resolves wavelength shifts down to 30 fm
  - Monitors high frequency signals up to 10 kHz
  - Can handle up to 1000 multiplexed sensors

- **SMART BMS ALGORITHMS**
  - SoC accuracy down to 2.5% using FO signals
  - Accurate SoH, SoP estimation also feasible
  - Initial cost-performance models indicate feasibility for 10-12% pack cost and up to 20 lbs. pack weight savings.

**Compact, low-cost SENSOR readout**

**Advanced battery management system to enable effective control**

**Real-time direct sensing of a battery’s internal conditions**

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Contact PARC to learn more: engage@parc.com