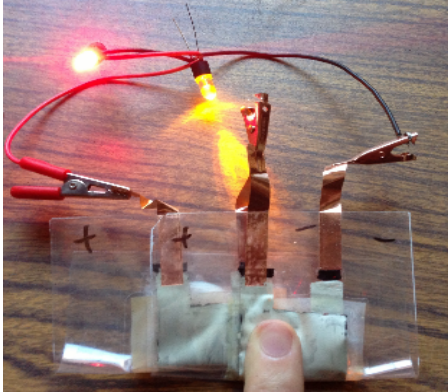
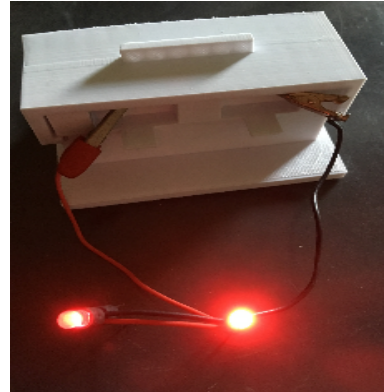


Periodates: potential electrochemical applications



Flexible batteries for novel electronics



3D-printed conformal power sources



Emergency and reserve batteries



Traditional AA, AAA, D consumer batteries



Car batteries



Capacitors

Periodates for Battery Applications: replacing traditional cathodes like MnO_2

- **Compatibility**
 - Can be used for various systems: from lithium cells in electronics to AA batteries in toys and remote controls.
 - Stable in acidic and basic environments.
- **Safety**
 - Aqueous electrolytes are neither flammable nor explosive.
 - Highly toxic metals can be avoided.
- **Large capacity**
 - Double the capacity of a traditional AA battery cathode.
 - Higher voltage than Ni-Cd, Ni-MH, zinc-carbon and alkaline battery cells.
- **Reaction: $2\text{IO}_4^- + 16\text{H}^+ + 14\text{e}^- \rightarrow \text{I}_2 + 8\text{H}_2\text{O}$**

Periodate electrodes: large capacity

Specific capacities for battery cathode materials

Materials	Specific capacity (mAh g ⁻¹)	Battery System	Electrolyte
LiCoO ₂	150	Lithium-ion	Organic
LiFePO ₄	160	Lithium-ion	Organic
NiOOH	290	Ni-MH, Ni-Cd, Ni-Zn	Aqueous
PbO ₂	220	Lead-acid	Aqueous
MnO ₂	310	Alkaline, zinc-carbon, lithium	Both
Ag ₂ O	230	Silver-zinc	Aqueous
Periodates	250-800	Periodate-Mg, Zn, Al, etc.	Both

Periodate cells (NaMnIO₆-Zn)

