

REDOX-MEDIATED FLOW BATTERIES: FIRST STEPS FROM FUNDAMENTS TO APPLICATION

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Redox flow batteries (dissolved active species)

Non-flow batteries

(solid active species)

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New Battery Concepts Bridging The Two Types







4 T. Paez, A Martínez-Cuezva, J Palma, E Ventosa, ACS App. Energy Mater. 2 (2019), 8328-8336. PCT/EP2019/086203



Our Approach: Redox Wiring

10 Ah L⁻¹ ferrocyanide (redox wire)

1180 Ah L⁻¹ Ni(OH)2 (solid active material)









Spontaneity and reversibility

 $E(red) > E(Ox) \rightarrow$ thermodynam. spontaneous

Voltaic Pile or Daniell Cell (Zn/Cu)



















2. Fundaments of Mediated Flow Battery

Spontaneity and reversibility















3. Batteries based on K₄Fe(CN)₆ – Ni(OH)₂ Utilization Rate of Solid Material







3. Batteries based on K₄Fe(CN)₆ – Ni(OH)₂ Proof of Stability



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Proof of Stability













