

# Achieving High Rate Capability with Organic Compounds

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We are all still bound to the “primal” fear or anxiety of running out of battery, which translates to “range anxiety” in the case of electric-vehicles. People spend too much time charging their phones, and this same limitation prevents a wider adoption of the electric vehicles. Therefore, one of today’s main challenges in the electric-vehicle and mobile industries is fast charging.

StoreDot has developed the Flash-Battery technology that enables to fully charge a battery as fast as 30 Seconds. A multidisciplinary approach is applied that is based on organic chemical synthesis capabilities combined with a holistic approach to the development of the entire battery cell. The anode is designed by integrating metalloids based active materials that are protected in a core-shell structures. This is achieved by unique electronic and ionic conductive proprietary organic molecules and polymers. Its particle size and electrode porosity distribution is optimized for enhanced ionic and electronic mobility. Together with improvements in the cathode and electrolyte, these give rise to unprecedented charging rates while enhancing the safety of the cell when compared to traditional Li-ion technology.

This presentation shows performance of battery cells with very high rate capability (up to 100C) that exhibit energy density around 200Wh/kg. This is achieved by using (1) proprietary organic compounds (2) treated nanomaterials including III-V metalloids (3) protection layers of the active materials using liquid and solid matrices and (4) unique battery management system that enables extended cycle life at high C rates while maintaining strict safety standards.

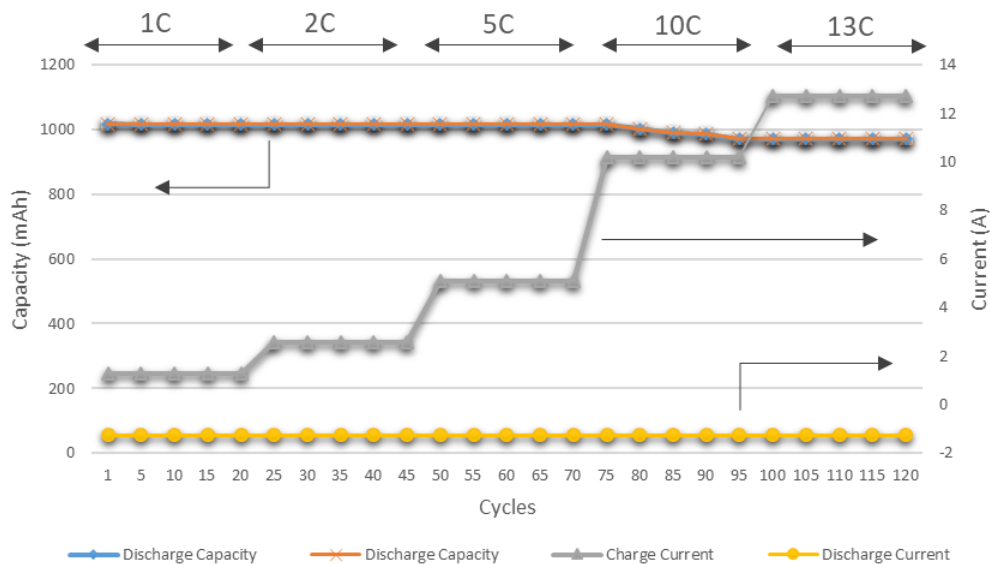


Figure 1: Capacity and current during charge and discharge cycles in different C-rates for a 1Ah cell