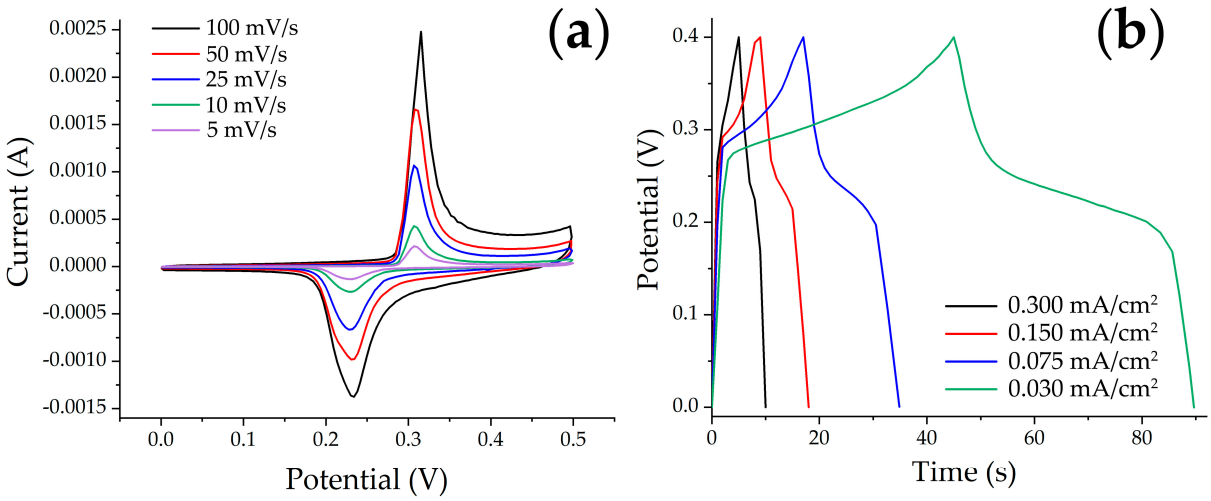

Figure S1. Electrochemical characterization of initial nickel-plated steel substrate: CV curves at various scan rates **(a)**, and GCD curves at various current densities **(b)**.

Table S1. Comparison of areal capacitance and cycle stability of different Ni-based electrode materials for micro-supercapacitors.

Electrode Material	Technology	Specific Capacitance	Cyclic Stability	Reference
$Ni(OH)_2$	Chemical Bath Deposition	16 mF/cm² at 62.5 μA/cm²	80% (1000 cycles)	[71]
$Ni(OH)_2$	Electrodeposition	1.5 mF/cm² at 62.5 μA/cm²	-	[71]
Ni-coated cotton textile with low-crystalline Ni-Al layered double hydroxide nanoparticles (NiAl-LDH@NCT)	Electrodeposition	311.9 mF/cm² at 50 mV/s	75.2% (5000 cycles)	[72]
Surface-modified nickel (Ni) wire/$NiCo_2O_4$/reduced graphene oxide	Wet etching + Hydrothermal synthesis	27.7 mF/cm² at 25 μA	-	[31]
$(M(CO_3)_{0.5}(OH)\cdot 0.11H_2O)$/(NiCo-LDH) (where M is Ni^{2+} and Co^{2+})	Hydrothermal synthesis	10.1 mF/cm² at 0.03 mA/cm²	93% (2000 cycles)	This work