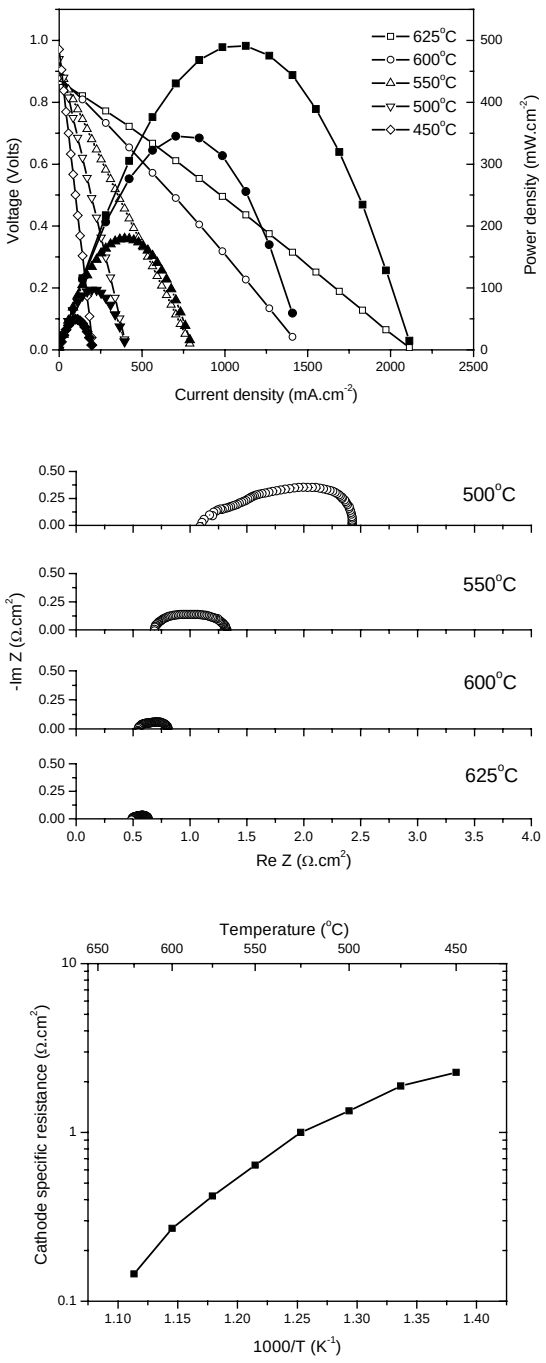

Supplementary Figure. 4 (a) Cell voltages and power densities measured at the temperatures indicated, (b) impedance spectra obtained from complete trilayer cells, and (c) total area specific resistance due to the anode and cathode electrodes. Fuel cells were fabricated in a manner identical to that used for cells containing BSCF as the cathode (anode supported, ~ 700 μm Ni + SDC anode, ~20 μm cathode and 20 μm electrolyte). Fuel cell polarization curves were obtained from these cells in order to establish whether the excellent performance obtained from BSCF cells was due to well-developed fabrication methods or to true differences between BSCF and known cathode materials (*e.g.* SSC). Peak power densities of ~350 and ~100 $mW.cm^{-2}$ were observed at 600 and 500 ^{o}C, respectively. The interfacial resistance of the electrodes was ~0.27 $\Omega.cm^2$ at 600 ^{o}C and ~1.34 $\Omega.cm^2$ at 500 ^{o}C. C.R. Xia *et al.* reported power densities of 50 - 120 $mW.cm^{-2}$ at 500 ^{o}C for an anode-supported SDC electrolyte (25μm) fuel cell with SSC+SDC (90:10%wt.) as the cathode [1]. They further reported a cathode interfacial resistance of ~1 $\Omega.cm^2$ at 500 ^{o}C [2]. Our results are in good agreement with these published values. We conclude that the excellent performance of fuel cells incorporating BSCF cathodes results from the inherent properties of the cathode material as opposed to advances in fuel cell preparation methods.

[1] Xia, C.R., Rauch, W., Chen, F.L. & Liu, M.L. $Sm_{0.5}Sr_{0.5}CoO_3$ cathodes for low-temperature SOFCs. *Solid State Ionics* **149**, 11-19 (2002).
[2] Xia, C.R., Chen, F.L. & Liu, M.L. Solid Oxide Fuel Cells Fabricated by Screen Printing. *Electrochem. & Solid State Letters*. **4**, A52-A54, (2001).