Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supplementary Information

for

Electrical properties and charge compensation mechanisms of Cr-doped rutile, TiO_2

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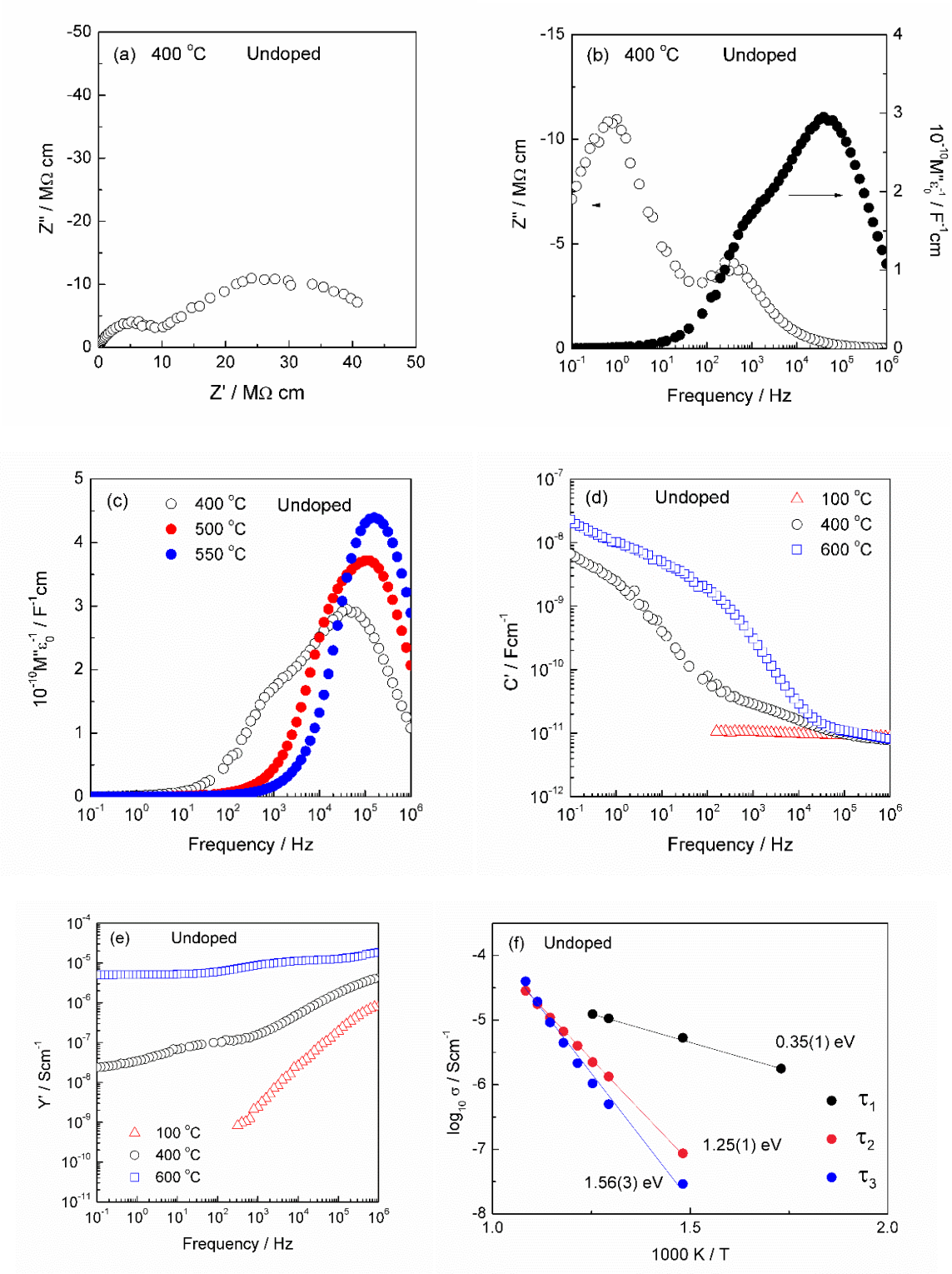

Fig. S1 Impedance data for undoped rutile: (a) impedance complex plane plots Z*, (b-c) spectroscopic plots of Z"/M", (d) capacitance plots C', (e) conductivity plots Y' and (f) Arrhenius plots of conductivity for τ_1, τ_2 and τ_3

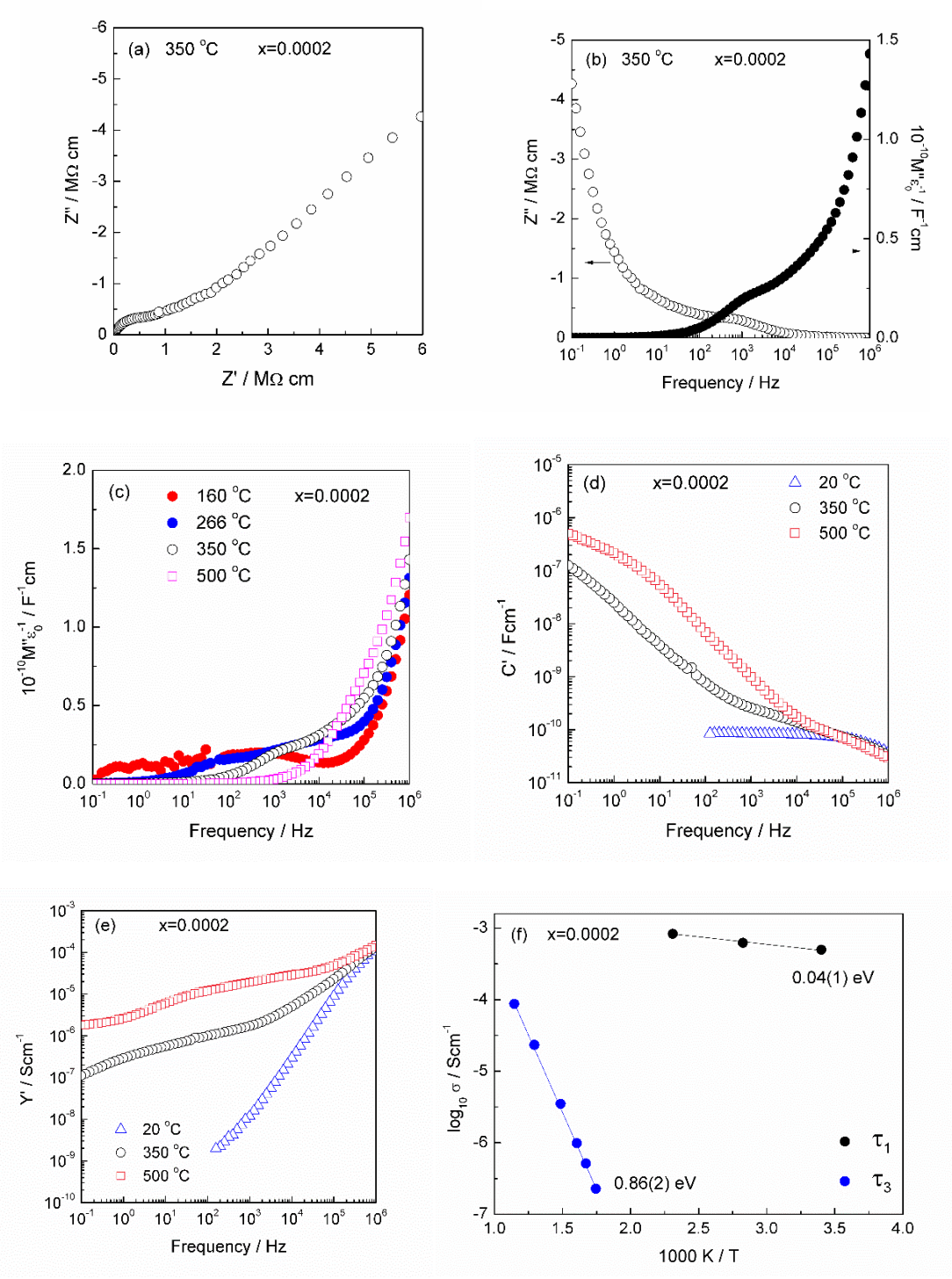

Fig. S2 Impedance data for $Ti_{1-x}Cr_xO_{2-x/2-\delta}$ (x=0.0002): (a) impedance complex plane plots Z*, (b-c) Z"/M", (d) C', (e) Y' and (f) Arrhenius plots of conductivity for τ_1 and τ_3

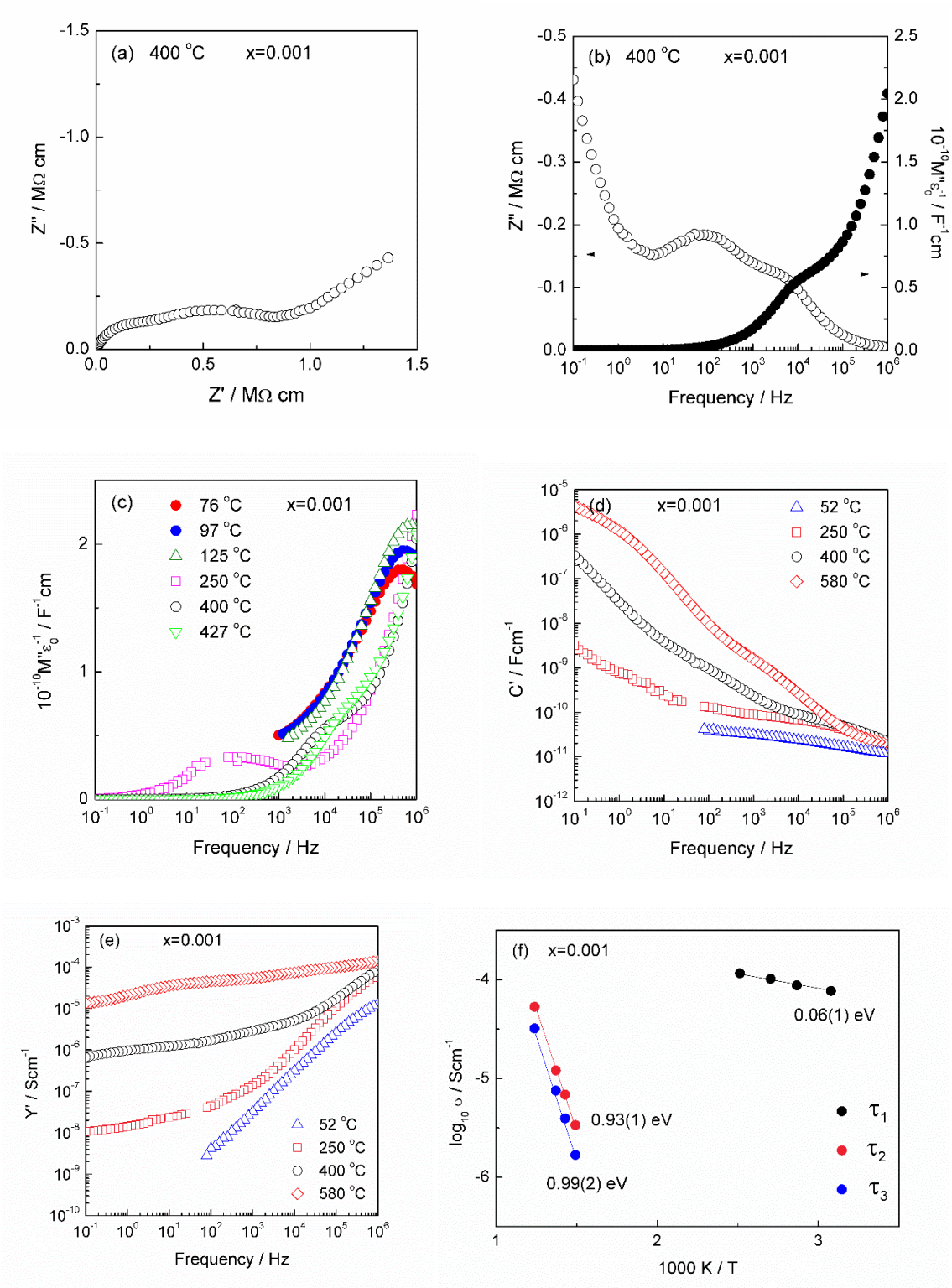

Fig. S3 Impedance data for x=0.001: (a) impedance complex plane plots Z*, (b-c) Z”/M”, (d) C’, (e) Y’ and (f) Arrhenius plots of conductivity for τ_1, τ_2 and τ_3

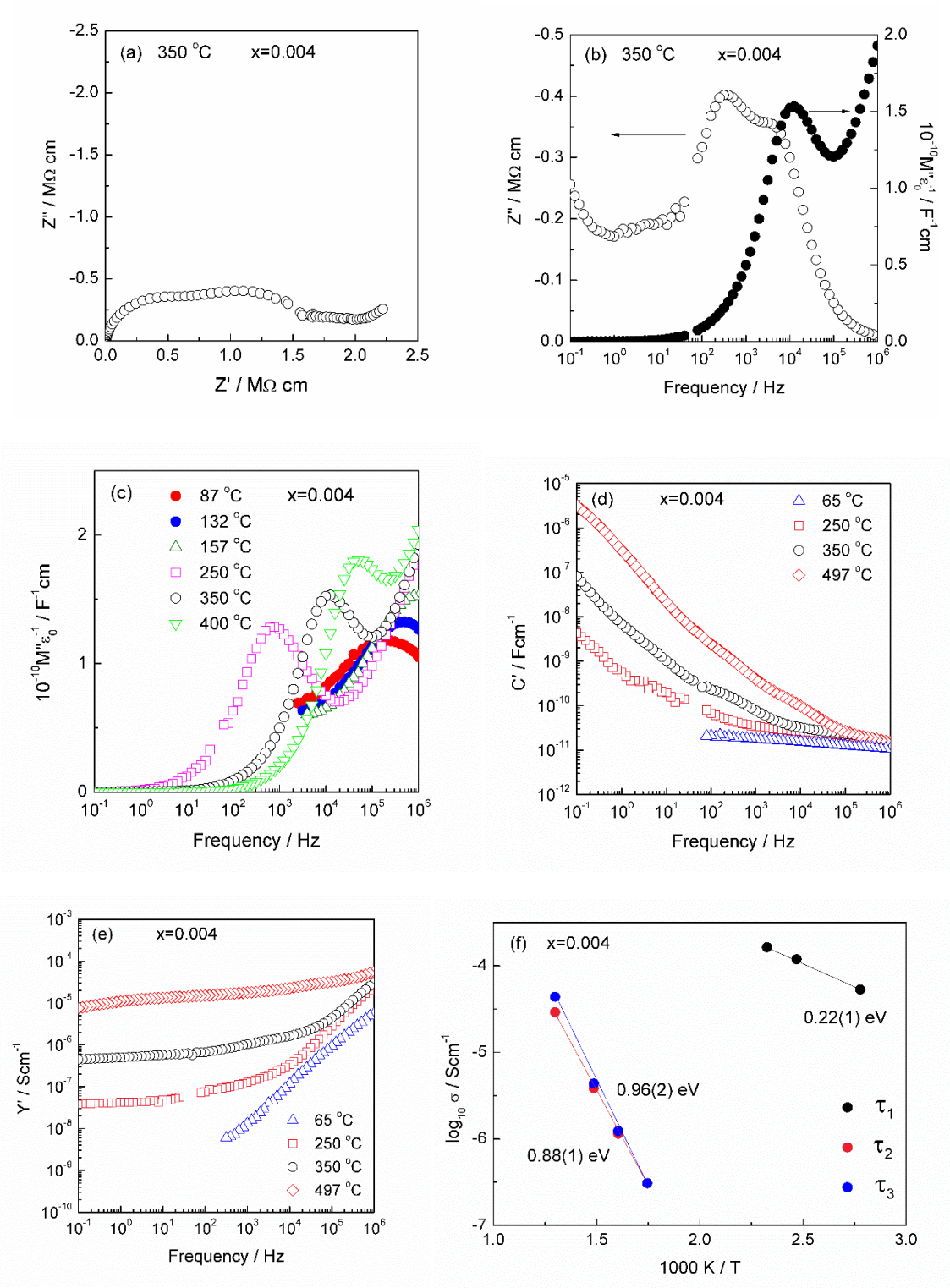

Fig. S4 Impedance data for x=0.004: (a) impedance complex plane plots Z*, (b-c) Z”/M”, (d) C’, (e) Y’ and (f) Arrhenius plots of conductivity for τ_1, τ_2 and τ_3

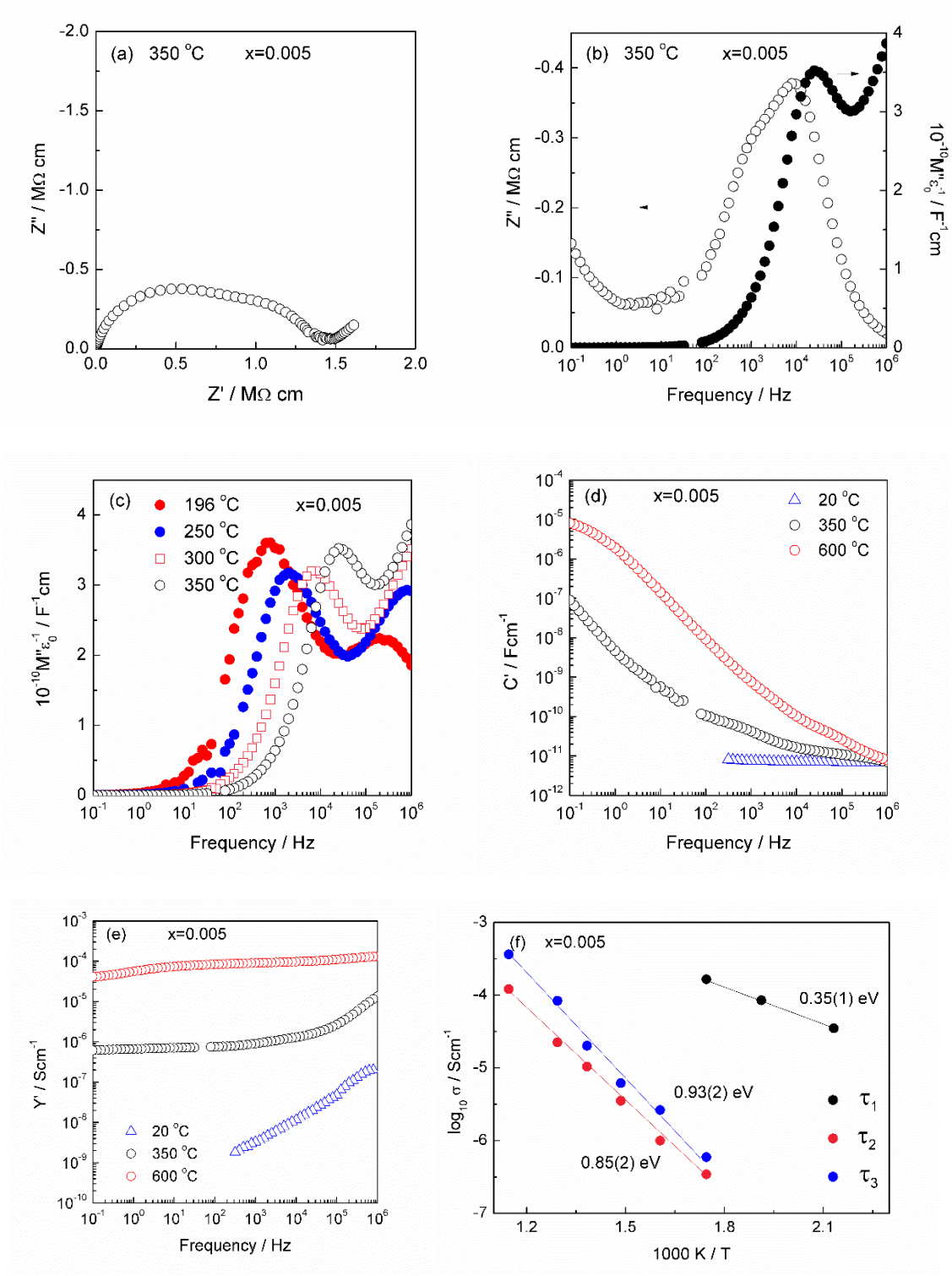

Fig. S5 Impedance data for x=0.005: (a) impedance complex plane plots Z*, (b-c) Z”/M”, (d) C’, (e) Y’ and (f) Arrhenius plots of conductivity for τ_1, τ_2 and τ_3

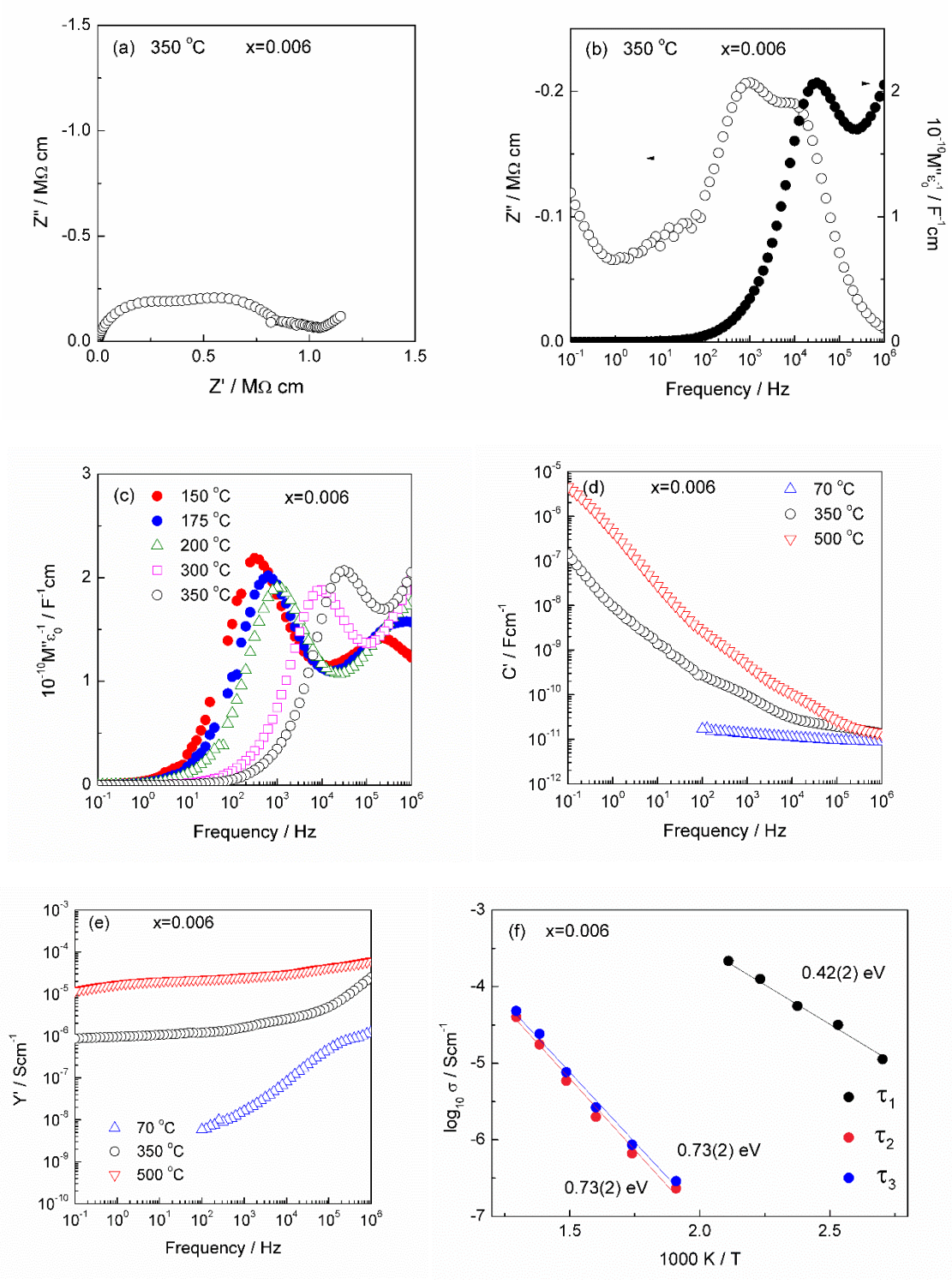

Fig. S6 Impedance data for x=0.006: (a) impedance complex plane plots Z*, (b-c) Z”/M”, (d) C’, (e) Y’ and (f) Arrhenius plots of conductivity for τ_1, τ_2 and τ_3

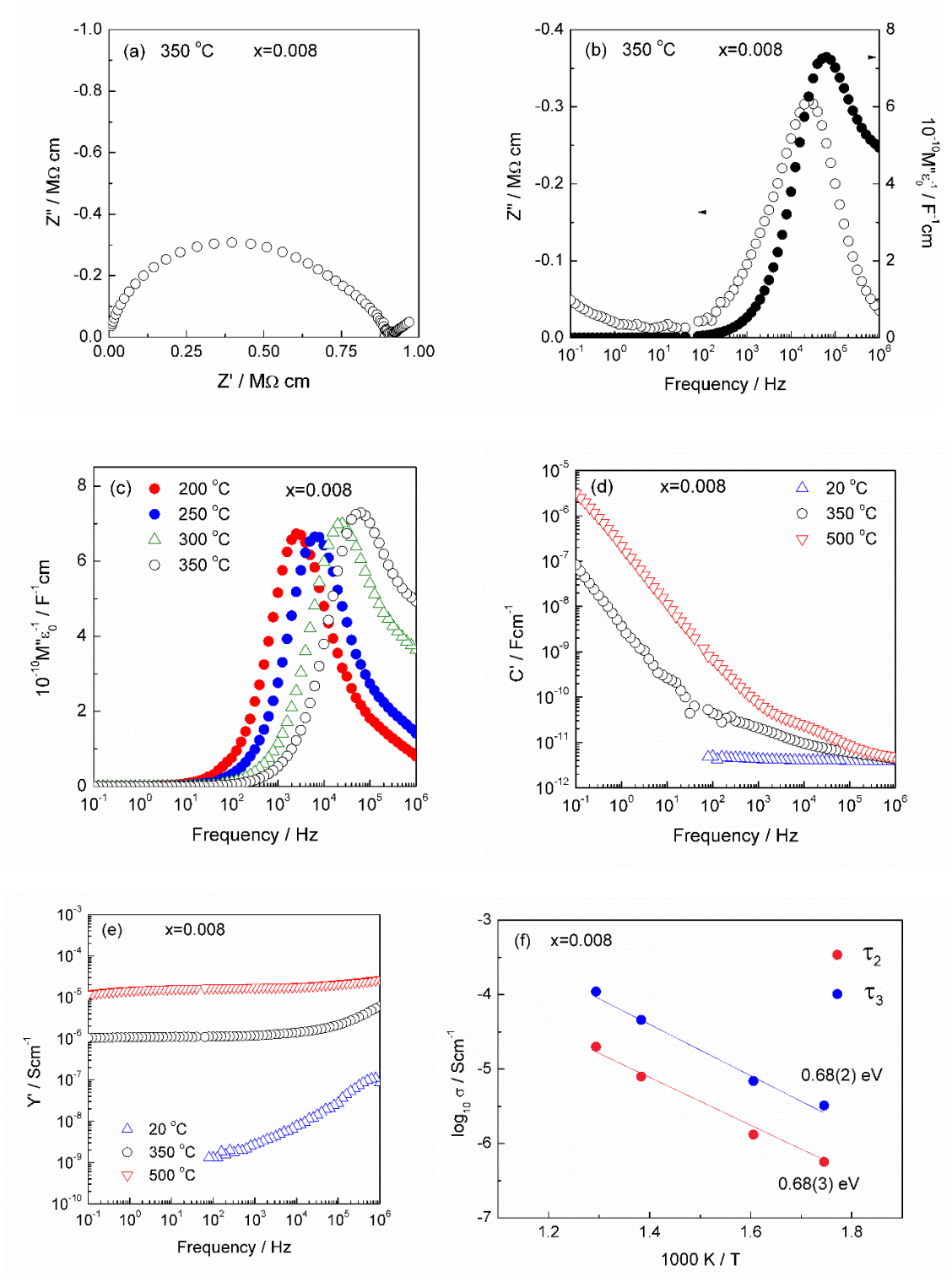

Fig. S7 Impedance data for x=0.008: (a) impedance complex plane plots Z*, (b-c) Z”/M”, (d) C’, (e) Y’ and (f) Arrhenius plots of conductivity for τ_2 and τ_3

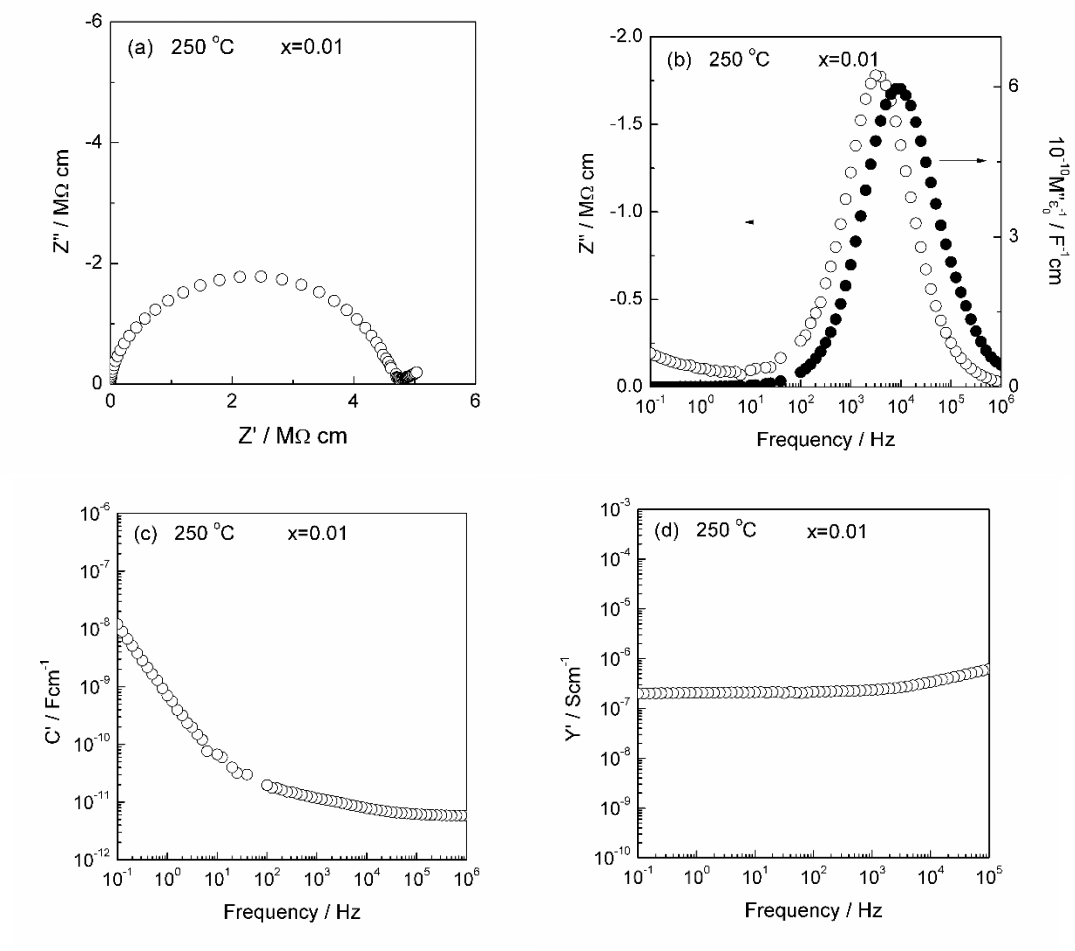

Fig. S8 Impedance data for x=0.01 collected at 250 °C: (a) impedance complex plane plots Z*, (b) Z”/M”, (c) C’ and (d) Y’

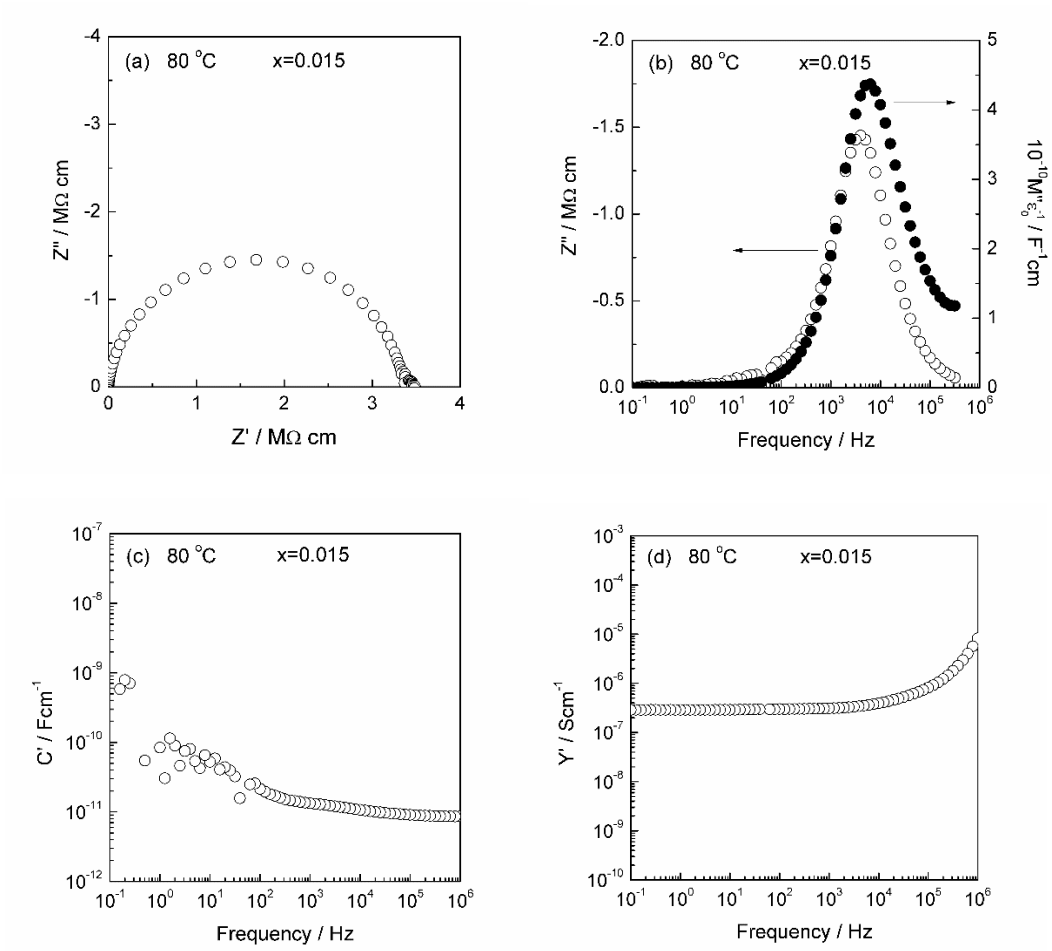

Fig. S9 Impedance data for x=0.015 collected at 80 °C: (a) impedance complex plane plots Z*, (b) Z”/M”, (c) C’ and (d) Y’

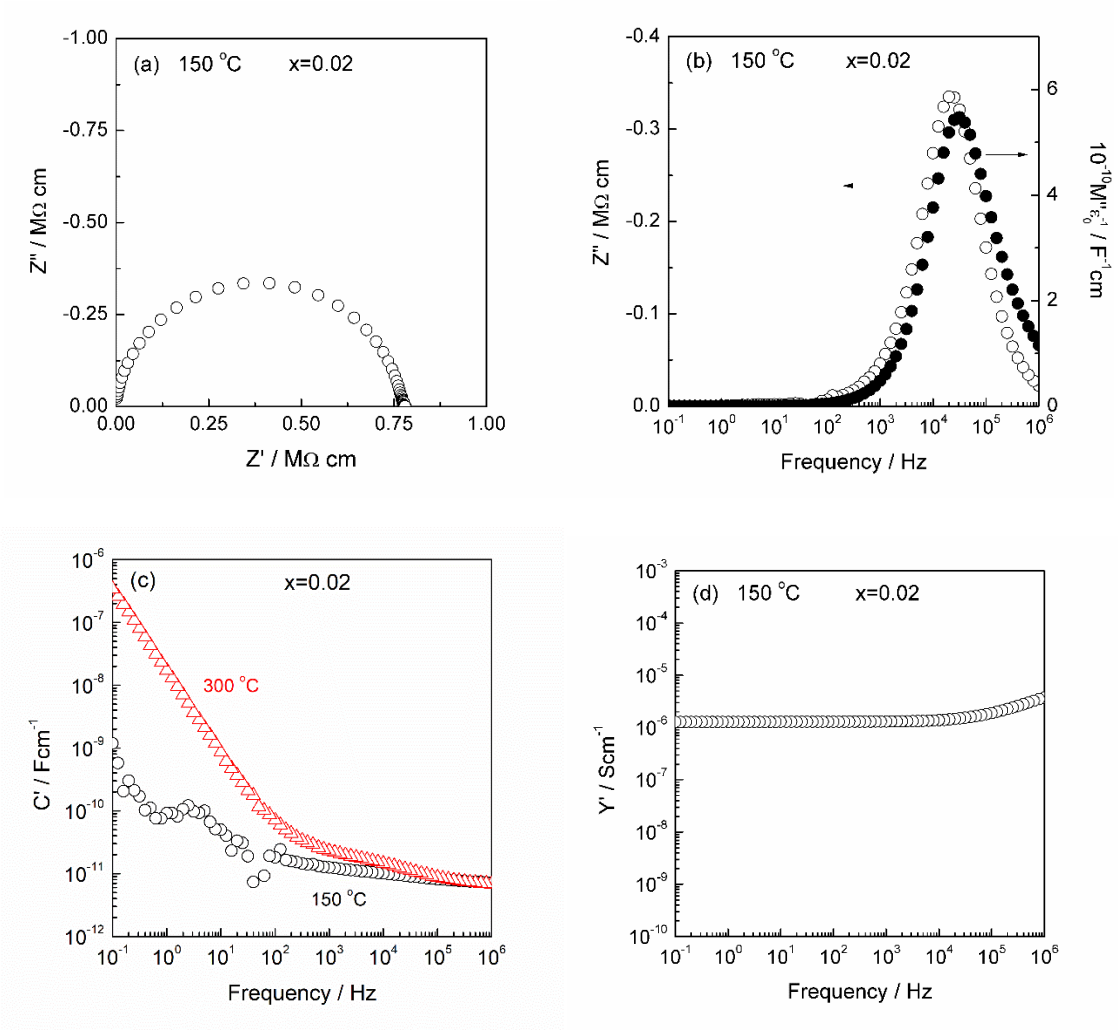

Fig. S10 Impedance data for x=0.02: (a) impedance complex plane plots Z*, (b) Z”/M”, (c) C’ and (d) Y’

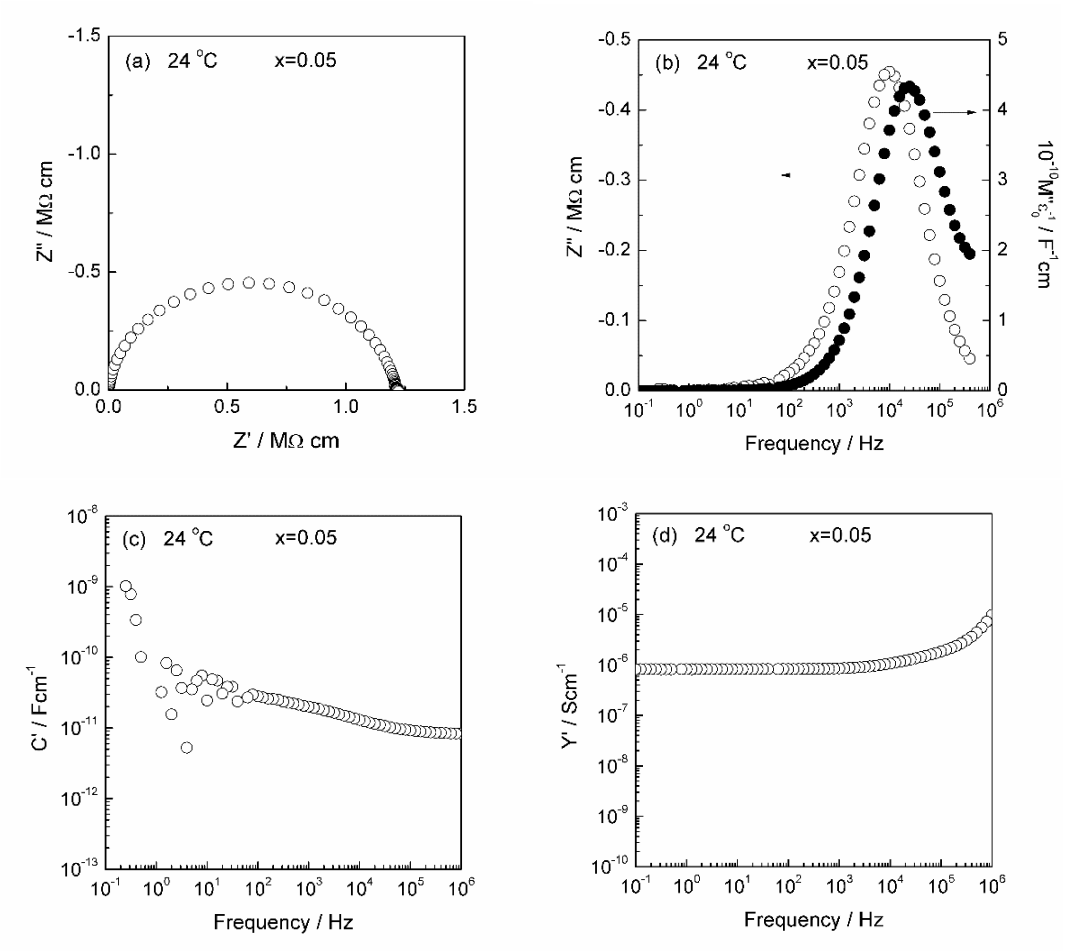

Fig. S11 Impedance data for x=0.05 collected at 24 °C: (a) impedance complex plane plots Z*, (b) Z”/M”, (c) C’ and (d) Y’