Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Supporting Information for

High ionic conductivity in melilite-type silicates

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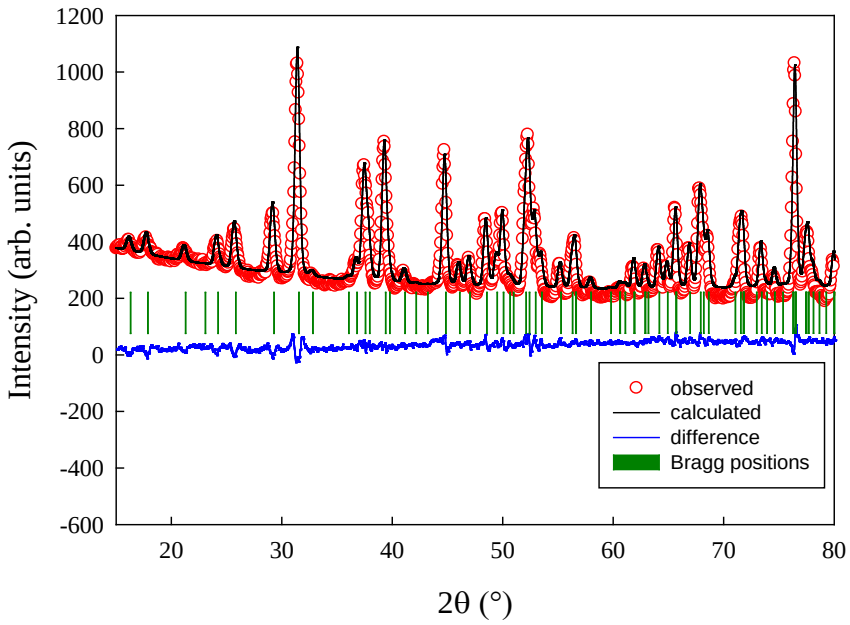

Figure SI-1 – Rietveld refinement of the neutron diffraction pattern for $Sr_2MgSi_2O_7$ at room temperature (Institute Laue-Langevin, Grenoble, France).

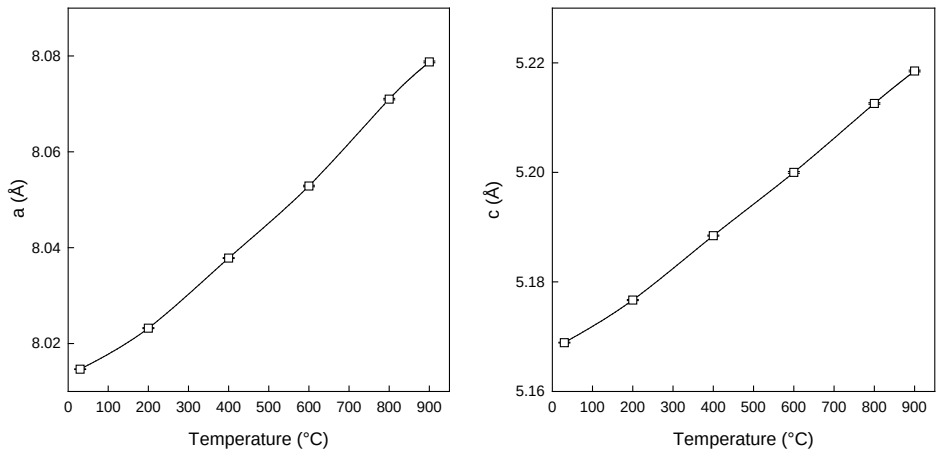

Figure SI-2 – Evolution of lattice parameter for $Sr_2MgSi_2O_7$ as a function of temperature as determined by neutron diffraction. (Error bars are within the size of the marker)

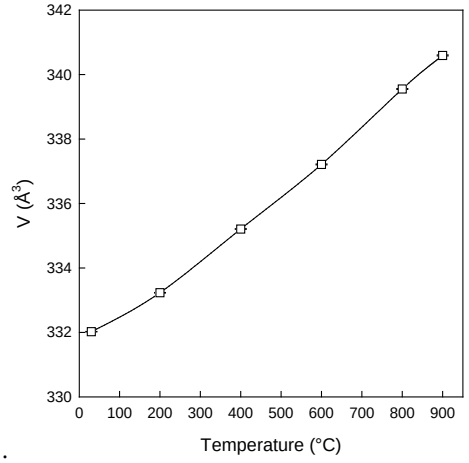

Figure SI-3 – Evolution of the lattice volume for $Sr_2MgSi_2O_7$ as a function of temperature as determined by neutron diffraction. (Error bars are within the size of the marker)

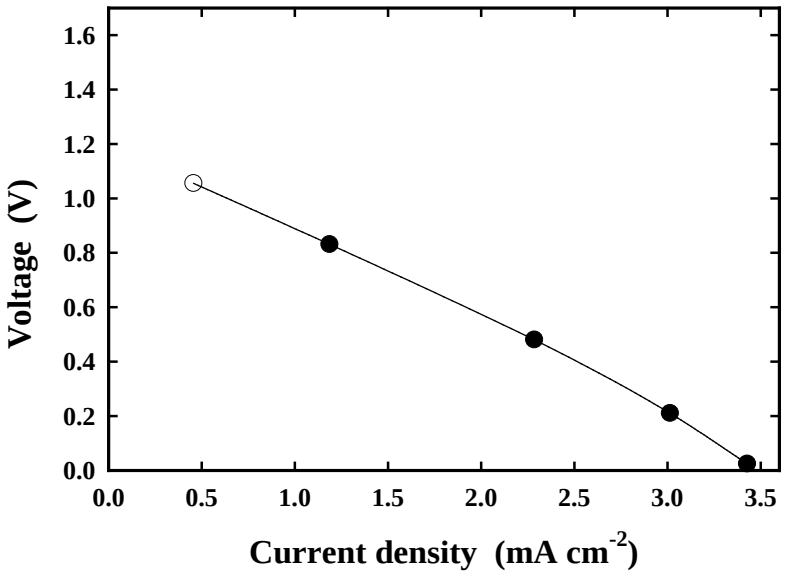

Figure SI-4. Polarization curve of a Pt/ $Sr_{1.7}Na_{0.3}MgSi_2O_{7-d}$ /Pt cell under solid oxide fuel cell operating conditions (hydrogen at the anode side and oxygen at the cathode side) measured under variable loads at 800°C.

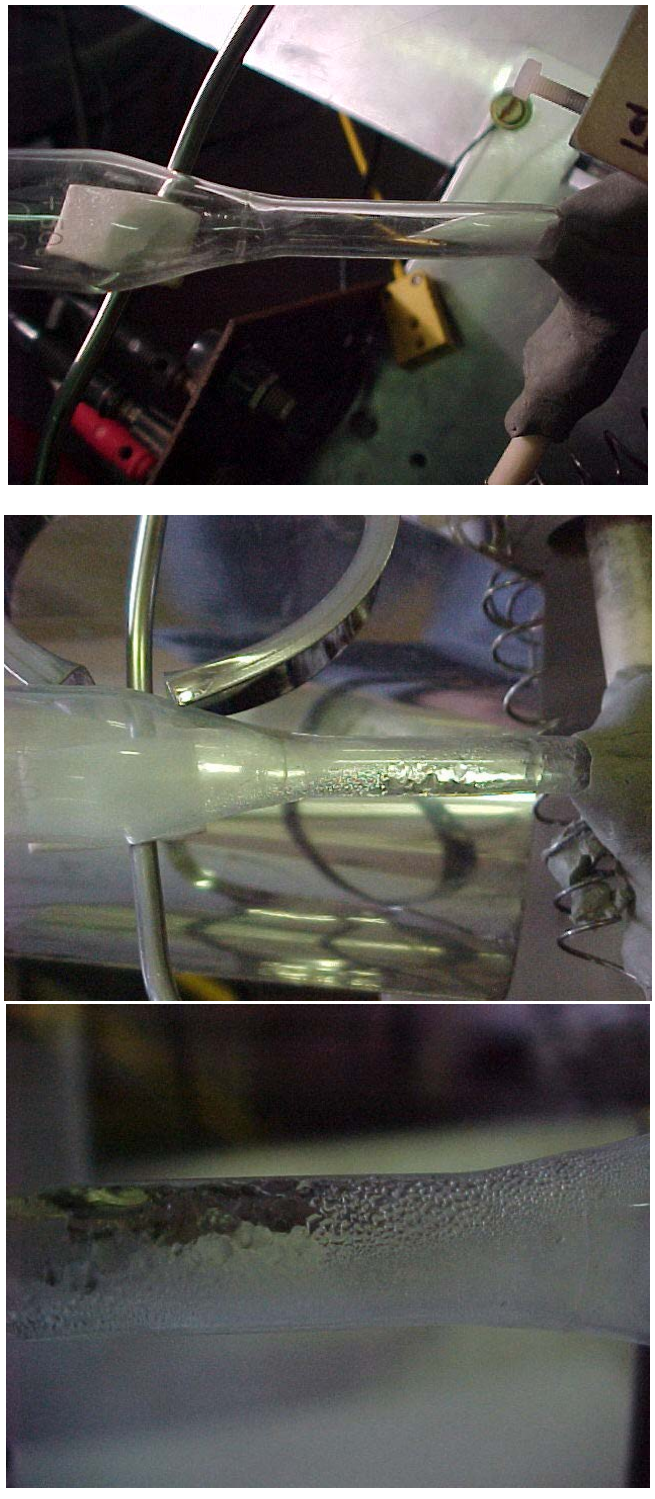

Figure SI-5. Pictures showing water formation at the anode side during cell discharge under variable loads. Water vapor in the outlet hydrogen gas flow condensates in a glass tube outside the oven.