

# Electronic supplementary information for:

## Proton conductivity in yttrium-doped barium cerate in nominally dry reducing conditions with view to application in chemical synthesis

Francisco J. A. Loureiro<sup>a,b,c,\*</sup>, Domingo Pérez-Coll<sup>d</sup>, Vanessa C. D. Graça<sup>a</sup>, Sergey M. Mikhalev<sup>a</sup>,  
Alejandro F. G. Ribeiro<sup>c</sup>, Adélio Mendes<sup>b</sup>, Duncan P. Fagg<sup>a</sup>

<sup>a</sup>Department of Mechanical Engineering, University of Aveiro, 3810-193 Aveiro, Portugal

<sup>b</sup>LEPABE - Faculdade de Engenharia, Universidade do Porto, rua Dr. Roberto Frias, 4200-465 Porto, Portugal

<sup>c</sup>Bondalti Chemicals, S.A., Quinta da Indústria, Rua do Amoníaco Português no. 10 Beduído, Estarreja 3860-680, Portugal

<sup>d</sup>Instituto de Cerámica y Vidrio, CSIC, Cantoblanco, 28049, Madrid, Spain

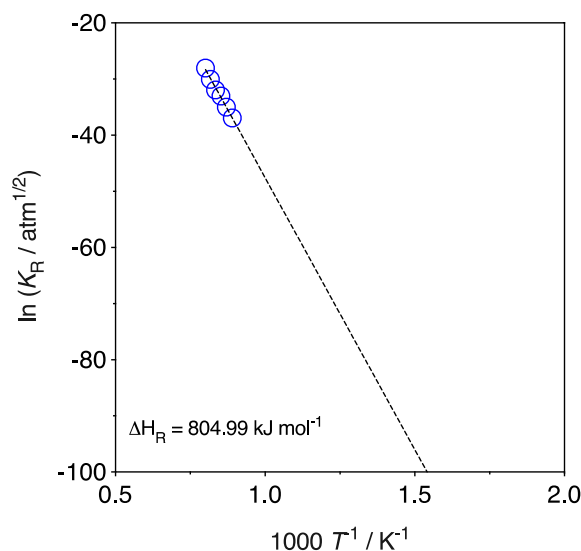


Fig. S1 – Values of  $K_R$  obtained from coulombic titration measurements as a function of temperature.

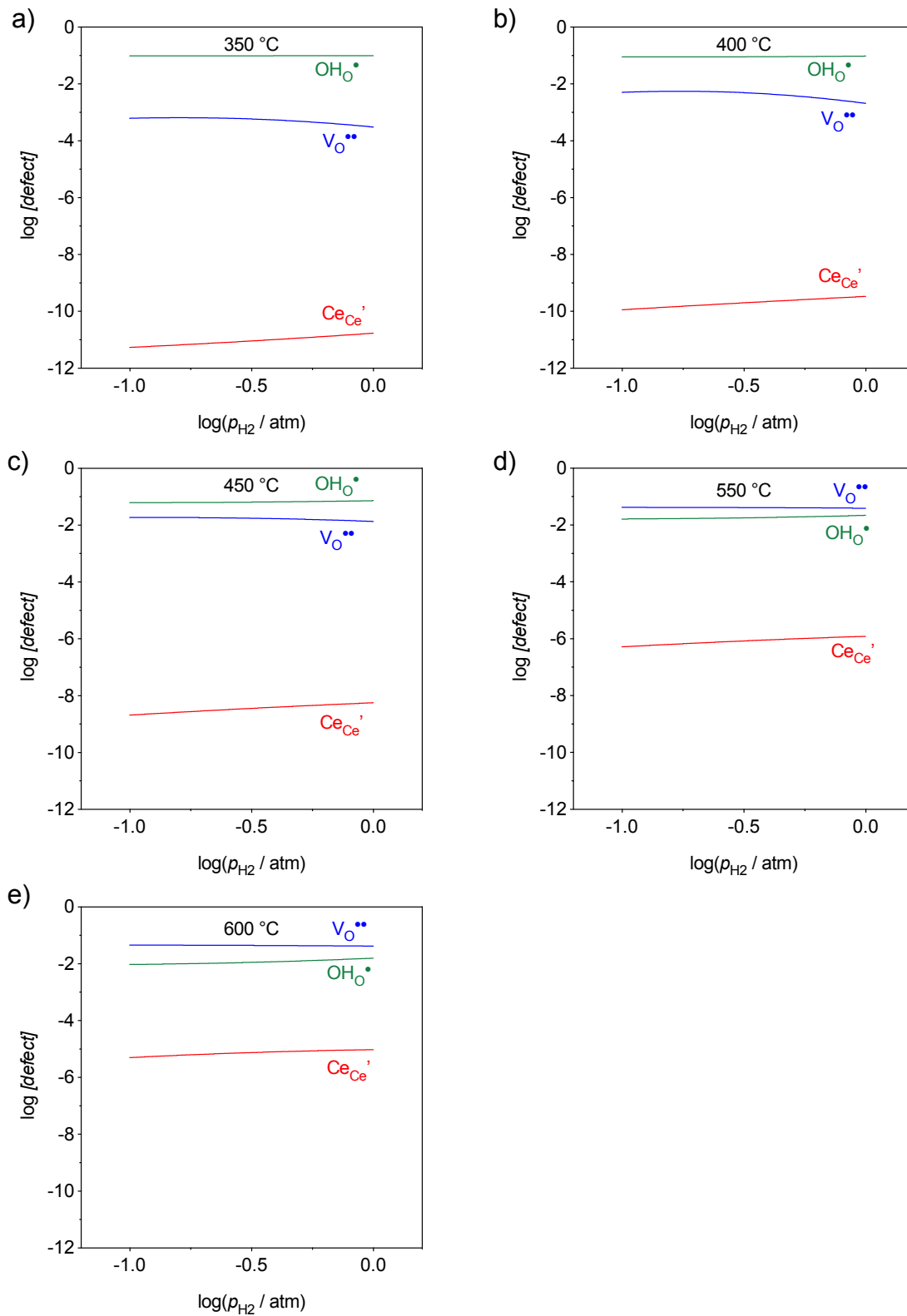


Fig. S2 – Defect concentration profiles as a function of hydrogen partial pressure.

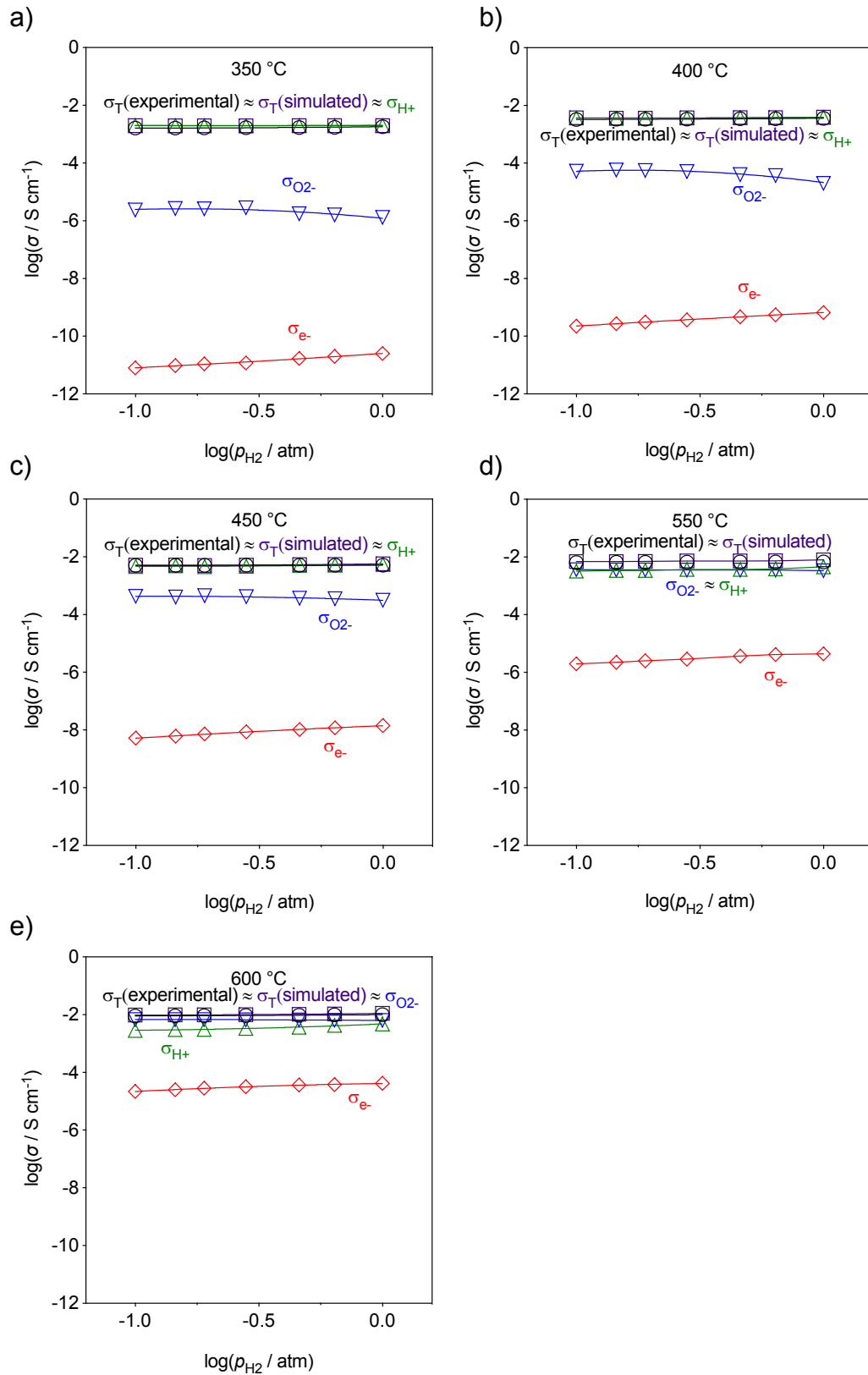


Fig. S3 – Partial conductivities as a function of hydrogen partial pressure.