Supplementary Information for

Metal speciation of volcanic aerosol from Mt. Etna under varying aerosol water content and pH obtained by different thermodynamic models

Tegan Hull¹, Sara D'Aronco^{1,2}, Suzanne Crumeyrolle³, Benjamin Hanoune⁴, Salvatore Giammanco⁵, Alessandro La Spina⁵, Giuseppe Salerno⁵, Lidia Soldà², Denis Badocco², Paolo Pastore², Pasquale Sellitto^{5,6}, Chiara Giorio^{1,2*}

¹ Yusuf Hamied Department of Chemistry, University of Cambridge, Lensfield Road, Cambridge, CB2 1EW, United Kingdom

² Dipartimento di Scienze Chimiche, Università degli Studi di Padova, Via Marzolo 1, 35131 Padova, Italy

³ CNRS, UMR 8518 - LOA - Laboratoire d'Optique Atmosphérique, Université Lille, Lille, France

⁴ Université Lille, CNRS, UMR 8522 - PC2A - Physicochimie des Processus de Combustion et de l'Atmosphère, Lille, France

⁵ Instituto Nazionale di Geofisica e Vulcanologia, Osservatorio Etneo, Catania, Italy

⁶ Univ Paris-Est Créteil and Université de Paris Cité, CNRS, Laboratoire Interuniversitaire des Systèmes Atmosphériques, Institut Pierre Simon Laplace, Créteil, France

*Corresponding author: chiara.giorio@atm.ch.cam.ac.uk



Figure S1. Comparison of the low-cost RH sensor and the reference RH instrument.



Figure S2. Detailed speciation of Zn^{2+} using pH and water content calculated using E-AIM for samples collected at the summit of Mt Etna.



Figure S3. Detailed speciation of Ni²⁺ using pH and water content calculated using E-AIM for samples collected at the summit of Mt Etna.