

## Supporting Information

### Sputtering-deposition of Ru nanoparticles onto Al<sub>2</sub>O<sub>3</sub> modified with imidazolium ionic liquids: Synthesis, characterisation and catalysis

Lucas Foppa,<sup>a</sup> Leandro Luza,<sup>a</sup> Aitor Gual,<sup>a</sup> Daniel E. Weibel,<sup>a</sup> Dario Eberhardt,<sup>b</sup> Sérgio R. Teixeira<sup>b</sup> and Jairton Dupont<sup>a\*</sup>

<sup>a</sup>Institute of Chemistry, UFRGS, Avenida Bento Gonçalves, 9500, Porto Alegre 91501-970 RS, Brazil. Fax: (+55) 5133087304; E-mail: jairton.dupont@ufrgs.br Address.

<sup>b</sup>Institute of Physics, UFRGS, Avenida Bento Gonçalves, 9500, Porto Alegre 91501-970 RS, Brazil.

<sup>c</sup>School of Chemistry, University of Nottingham, University Park, Nottingham, NG7 2RD, UK  
Jairton.dupont@nottingham.ac.uk

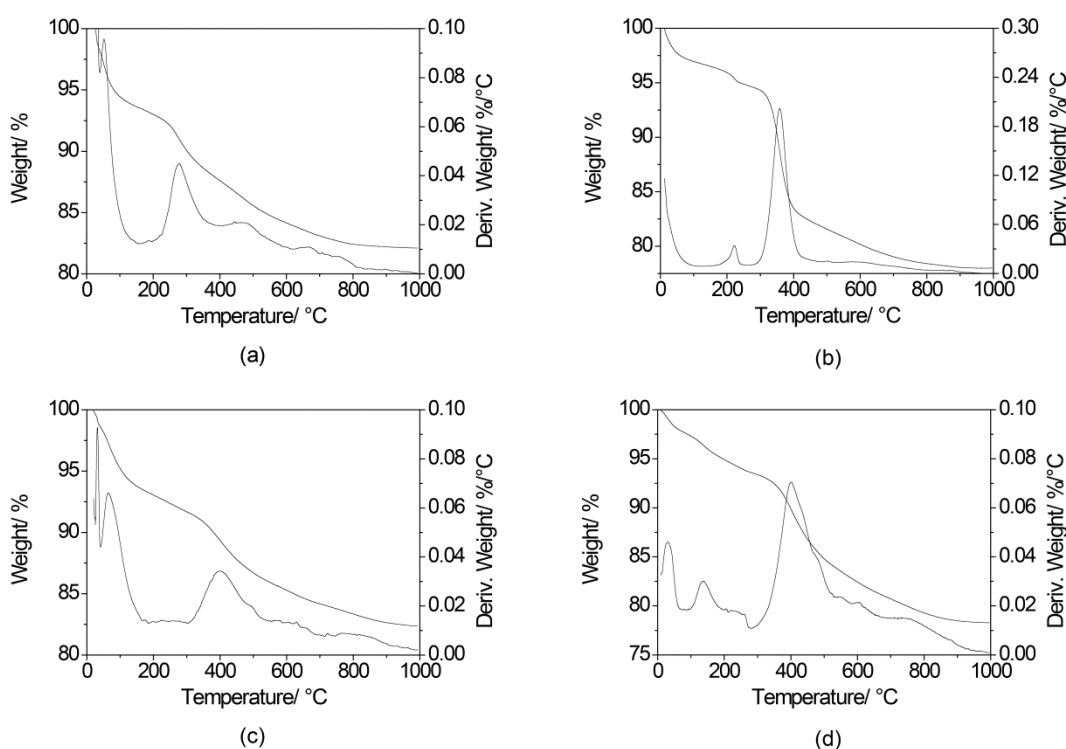
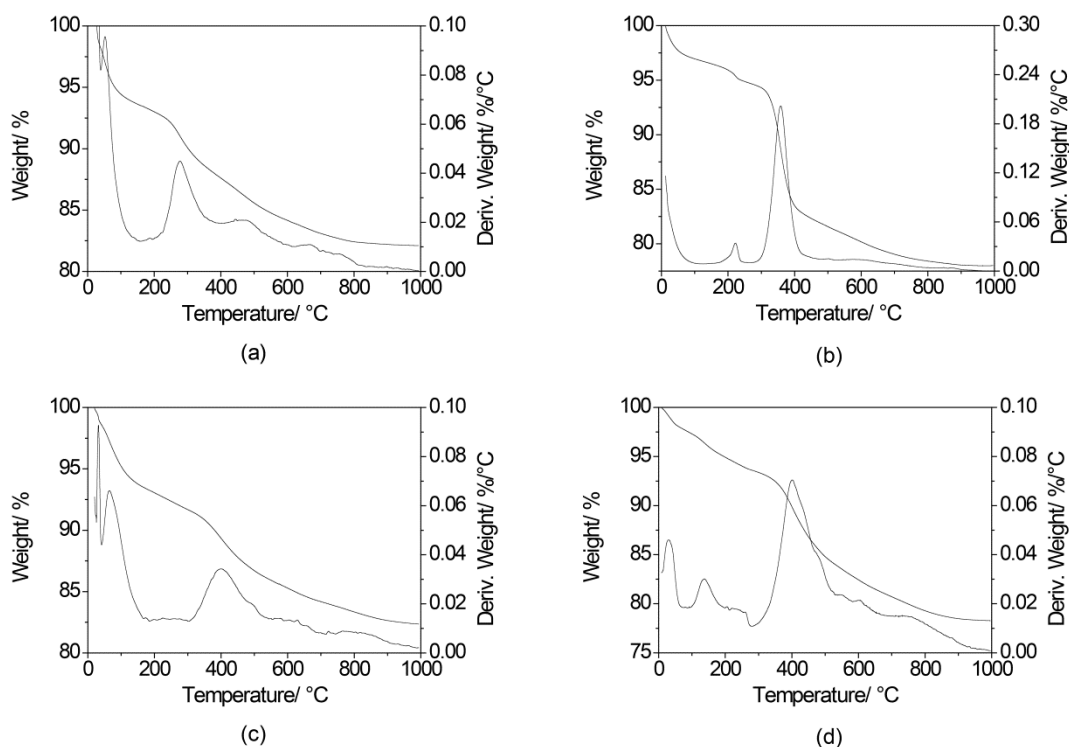


Figure S1. TGA profiles of supports (a) M1, (b) M2, (c) M3 and (d) M4.



**Figure S2.** TGA profiles of supports (a) B1, (b) B2, (c) B3 and (d) B4.

#### General procedure for the synthesis of supported Ru-NPs by the decomposition of Ru(Me-allyl)<sub>2</sub>(COD)

The appropriate amount of bis(2-methylallyl)(1,5-cyclooctadiene) ruthenium(II) and  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> was dispersed in MeOH (10mL) and added to a Fischer-Porter reactor. It was pressurized with 4 bar of H<sub>2</sub> and warmed at 75 °C. After 5 min, the solution became black, indicating the formation of Ru-NPs. The reaction was maintained under these conditions during 18 h in order to ensure the total reduction of the Ru-precursor. Then, the reactor was cooled and depressurized. The supported catalyst was isolated and dried under vacuum.