

High current density electrodeposition from silver complex ionic liquids - Electronic Supplementary Information

Stijn Schaltin,^a Neil R. Brooks,^b Linda Stappers,^a Kristof Van Hecke,^b Luc Van Meervelt,^b
Koen Binnemans,^b and Jan Fransaer*^a

^a*Katholieke Universiteit Leuven, Department of Metallurgy and Materials Engineering,
Kasteelpark Arenberg 44 - bus 2450, B-3001 Leuven, Belgium. Fax: +32 16 32 19 91; Tel:
+32 16 32 12 60; E-mail: Jan.Fransaer@mtm.kuleuven.be*

^b*Katholieke Universiteit Leuven, Department of Chemistry, Celestijnenlaan 200F - bus 2404,
B-3001 Leuven (Belgium)*

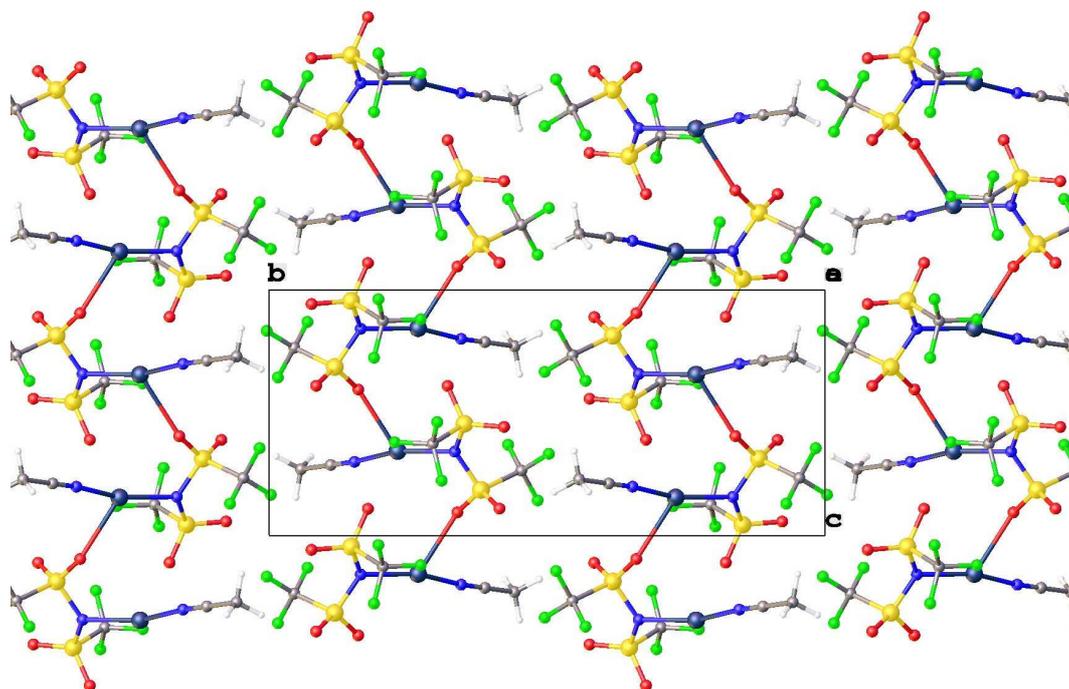


Figure 1: View of the packing in the crystal structure of [Ag(MeCN)][Tf₂N], viewed along the crystallographic *a* axis.

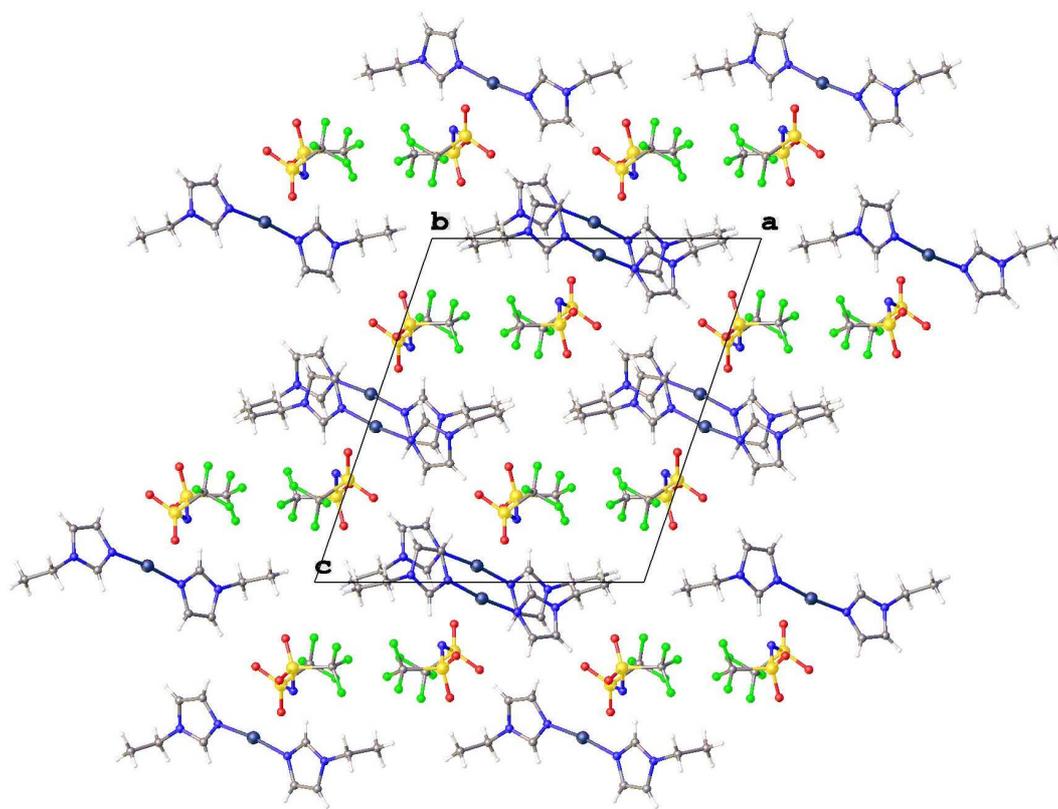


Figure 2: View of the packing in the crystal structure of $[\text{Ag}(\text{EtIm})_2][\text{Tf}_2\text{N}]$, viewed along the crystallographic b axis.

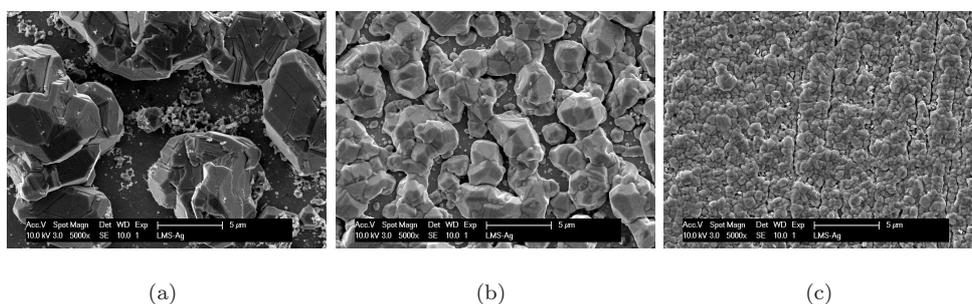


Figure 3: Silver deposits from $[\text{Ag}(\text{MeCN})_4]_2[\text{Ag}(\text{Tf}_2\text{N})_3]$, saturated with water, on a Au working electrode at 50 °C for different current densities: (a) 1 A dm^{-2} , (b) 5 A dm^{-2} , and (c) 25 A dm^{-2} . The theoretical thickness is $1 \mu\text{m}$.

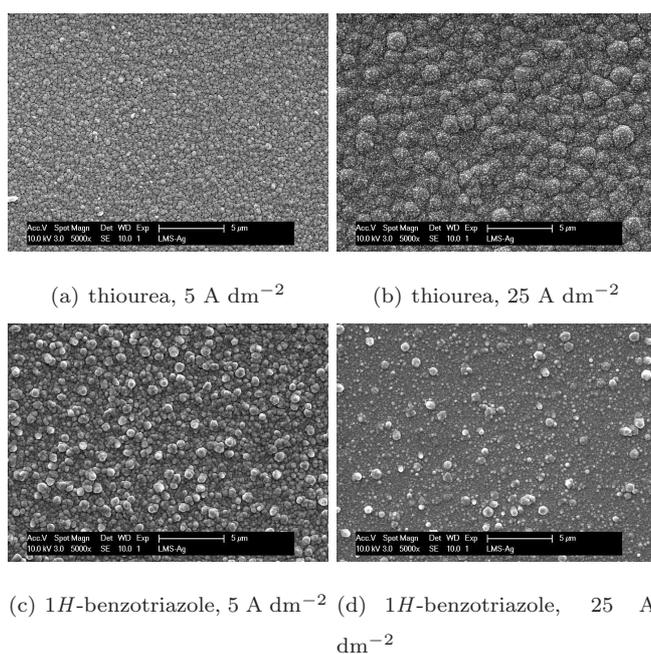


Figure 4: Silver deposits from $[\text{Ag}(\text{MeCN})_4]_2[\text{Ag}(\text{Tf}_2\text{N})_3]$ on a Au working electrode at 50 °C for 5 A dm⁻² and 25 A dm⁻² with 0.05 mol dm⁻³ of the mentioned additive. The theoretical thickness is 1 μm.

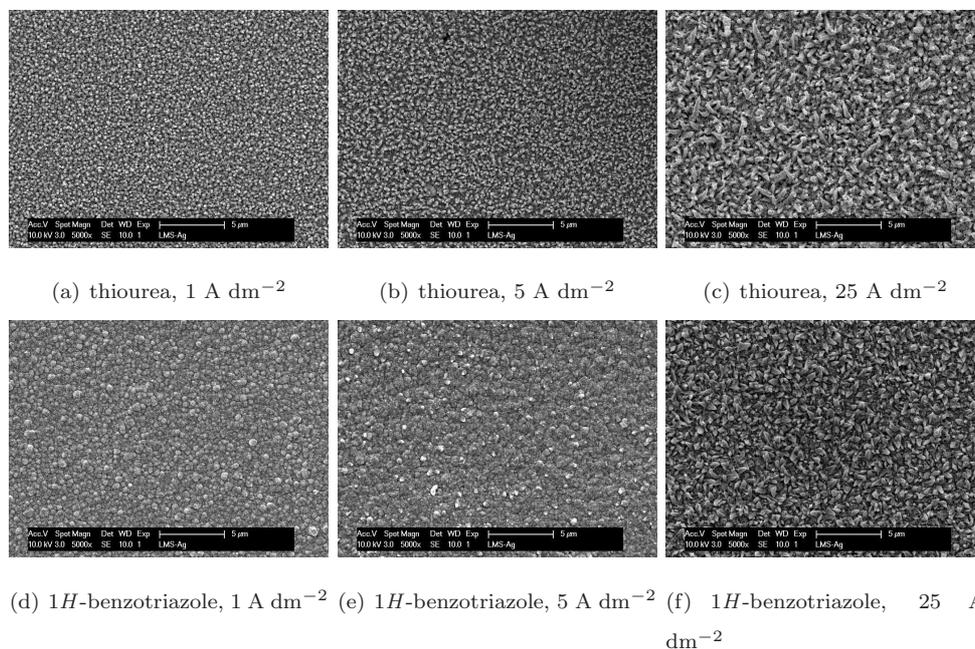


Figure 5: Silver deposits from $[\text{Ag}(\text{EtIm})_2][\text{Tf}_2\text{N}]$ on a Au working electrode at 90 °C for 1 A dm⁻², 5 A dm⁻² and 25 A dm⁻² with 0.05 mol dm⁻³ of the mentioned additive. The theoretical thickness is 1 μm.

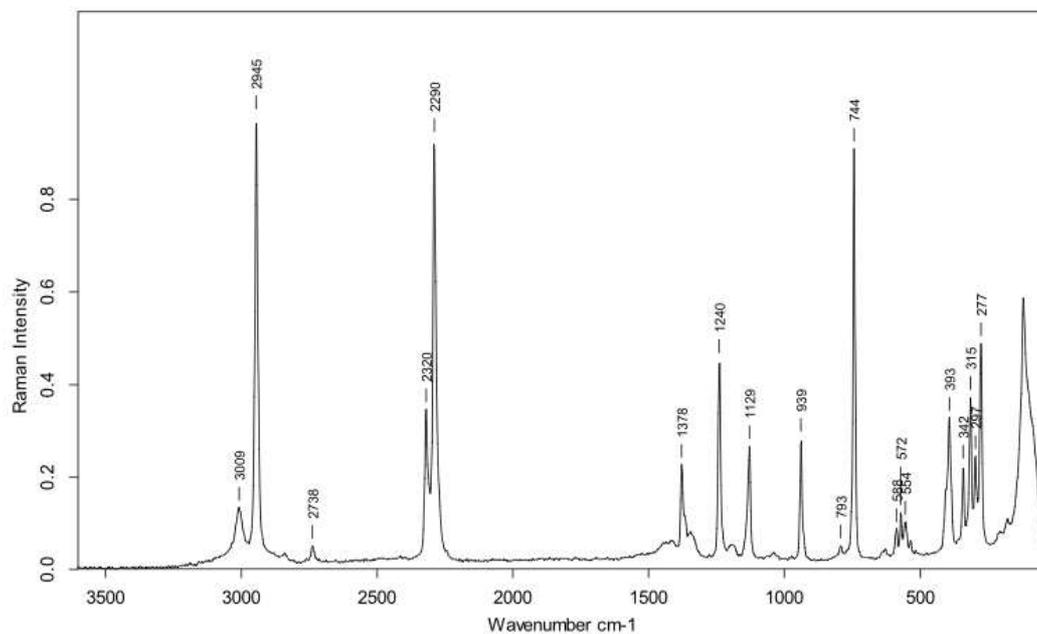


Figure 6: Raman spectrum of solid $[\text{Ag}(\text{MeCN})_4]_2[\text{Ag}(\text{Tf}_2\text{N})_3]$.

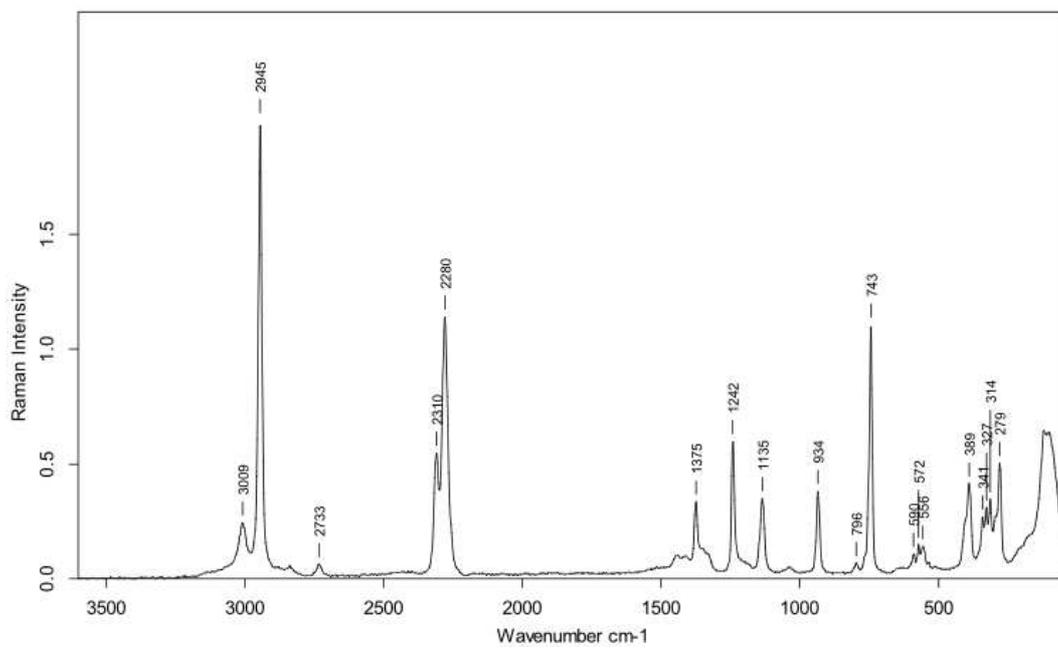


Figure 7: Raman spectrum of liquid $[\text{Ag}(\text{MeCN})_4]_2[\text{Ag}(\text{Tf}_2\text{N})_3]$.