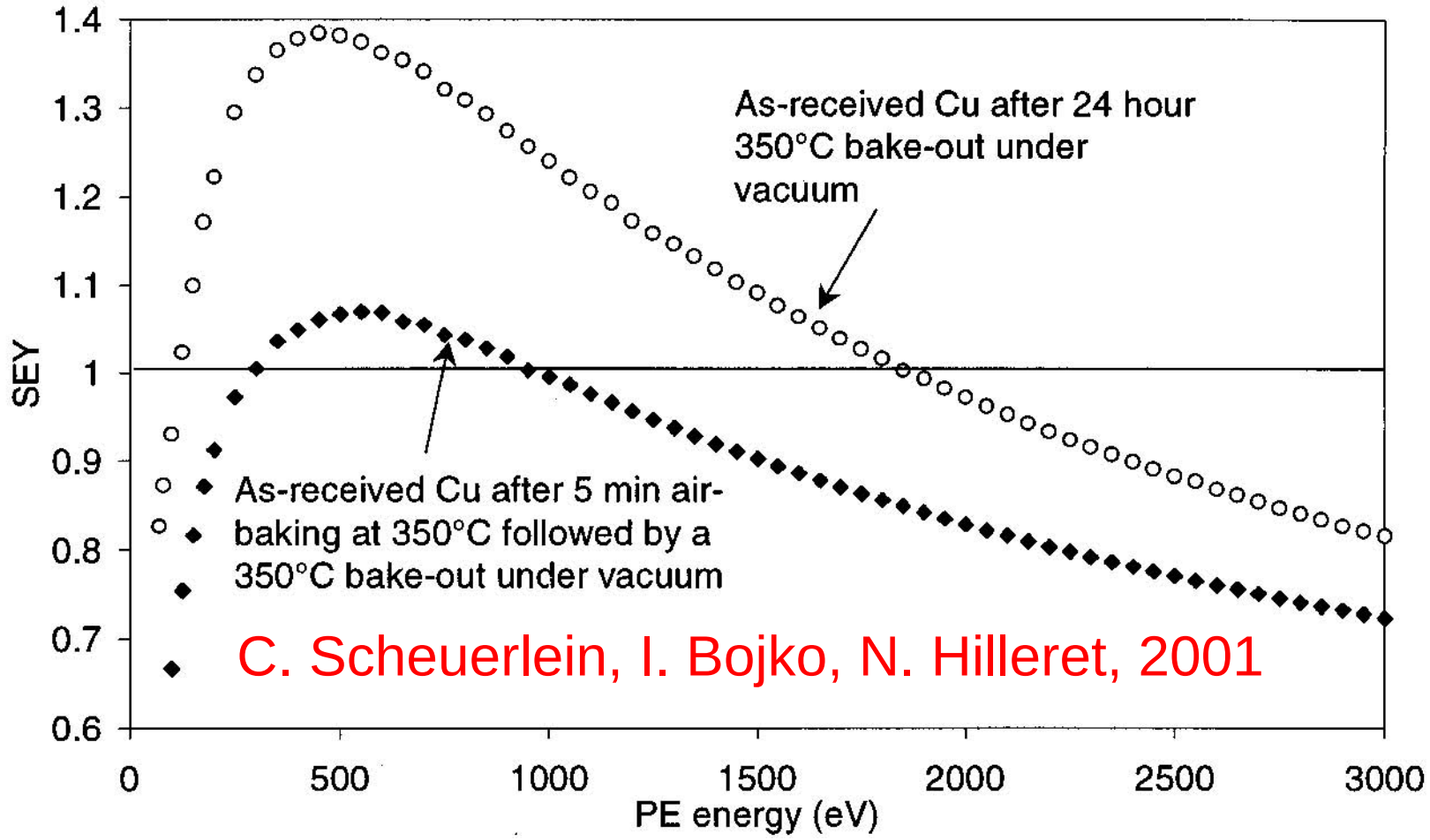
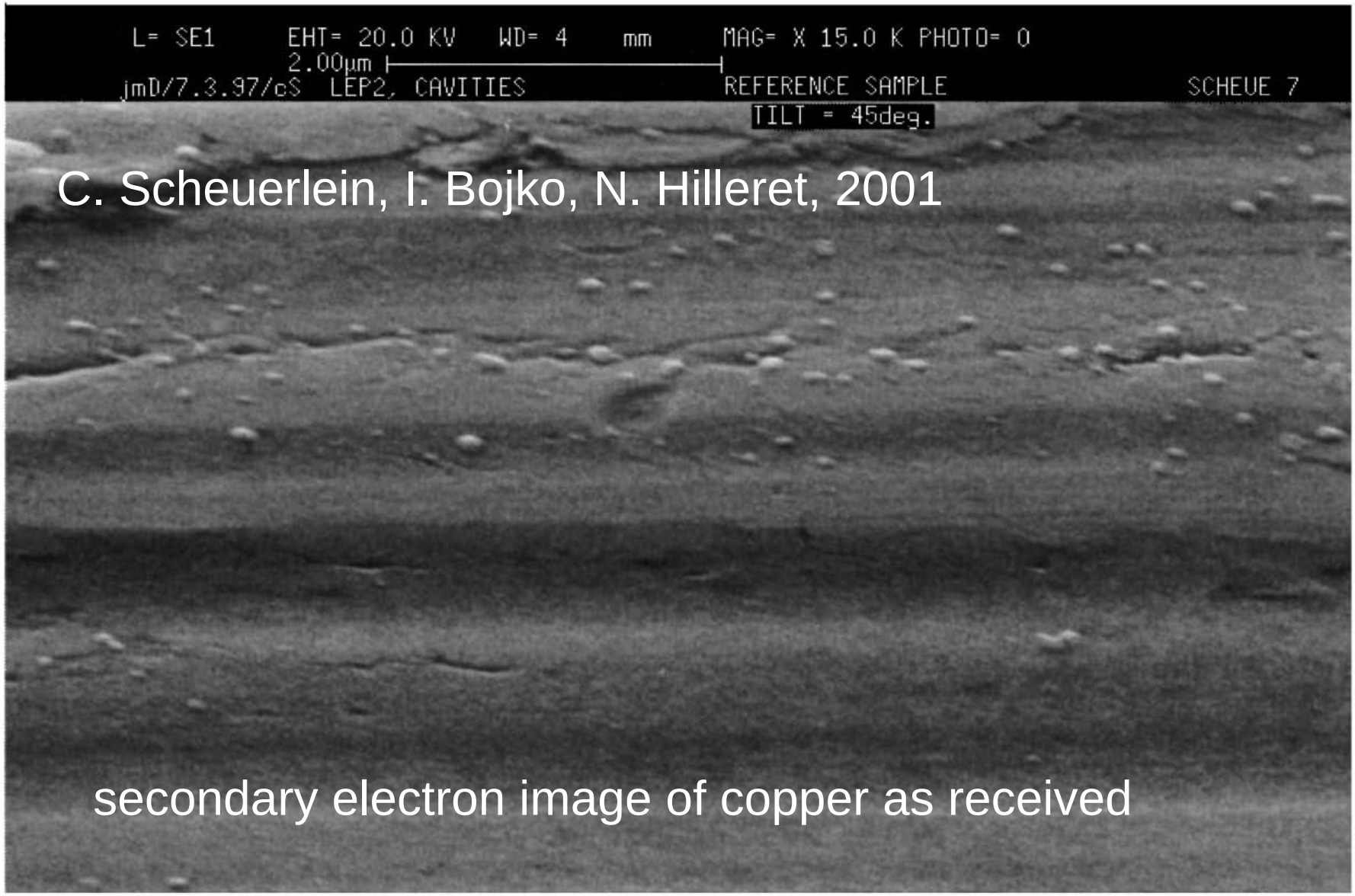
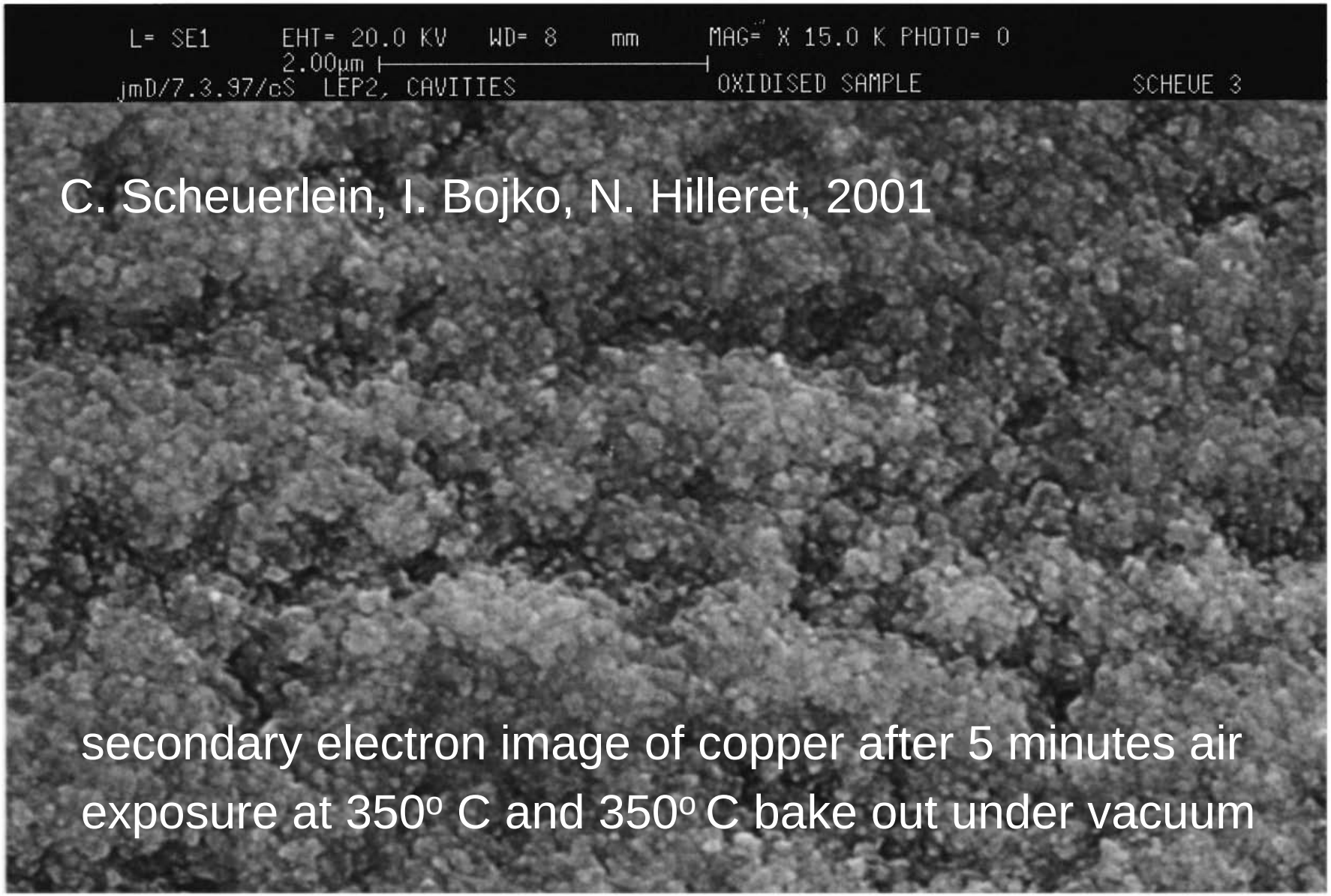
Air baked copper

studied by C. Scheuerlein, ~2000

secondary electron image of copper as received after 24 h bakeout under vacuum and of copper after 5 minutes air exposure at 350^{o} C and 6-h 350^{o} C bake out under vacuum




L= SE1 EHT= 20.0 KV WD= 4 mm MAG= X 15.0 K PHOTO= 0
2.00µm
jmD/7.3.97/cS LEP2, CAVITIES REFERENCE SAMPLE SCHEVE 7
TILT = 45deg.
C. Scheuerlein, I. Bojko, N. Hilleret, 2001
secondary electron image of copper as received


L= SE1 EHT= 20.0 KV WD= 8 mm MAG= X 15.0 K PHOTO= 0
2.00µm
jmD/7.3.97/cS LEP2, CAVITIES
OXIDISED SAMPLE
SCHEUE 3
C. Scheuerlein, I. Bojko, N. Hilleret, 2001
secondary electron image of copper after 5 minutes air exposure at 350º C and 350º C bake out under vacuum

Summary:
Air baked copper lab measurement

Heating copper in air prior to in-situ bakeout is a simple method to produce large uniform surfaces with reduced SE emission.

Reduction in SEY is due to formation of 50-nm layer of cuprous oxide, Cu2O (δ_{max}~1.2), whose SEY is lower than SEY of Cu (δ_{max}~1.3), plus surface roughening

Reference

I. Bojko, N. Hilleret, C. Scheuerlein, Influence of Air Exposures and Thermal Treatments on the Secondary Electron Yield of Copper, J. Vac. Sci. Technol. A 18 (3) p. 972 (2000)