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Supplementary Material

UV Hyperspectral Imaging as Process Analytical Tool for the Characterization of Oxide Layers and Copper States on Direct Bonded Copper

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Diffuse reflectance spectra of the copper powders were recorded in the range of 200 nm – 380 nm using a commercial UV spectrometer (Lambda 1050+, PerkinElmer, Inc., Waltham, MA, USA). The spectrometer was equipped with a 150 mm Spectralon® integrating sphere to acquire data in reflection mode with an R6872-Photomultiplier (PMT). A deuterium lamp was used as light source in the spectrometer. A 10 mm quartz SUPRASIL® cuvette (QS, 100-10-40, Hellma, Müllheim, Germany) was used for measuring the copper powder see Table S1. The filled cuvette was placed at the reflectance port of the integrating sphere. The port measuring area is approximately 4.9 cm².

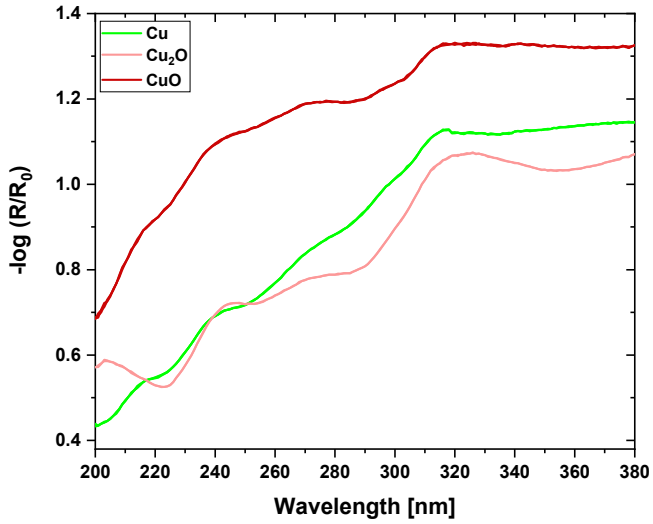

Figure S1. Reference spectra for the copper Cu^0, Cu_2O and CuO by using UV spectrometer.

Table S1. Description of the direct bonded copper substrates and their sample preparation.

Sample type	Description	Manufacturer	Article Number
Cu	Copper, powder, electrolytically produced	Merck KGaA, Darmstadt, Germany	2715
Cu2O	Copper (I) oxide powder, red	Riedel-de Haën AG, Seelze, Germany	12841
CuO	Copper (II) oxide powder, heavy, powder, technical	Riedel-de Haën AG, Seelze, Germany	12867