Electronic Supplementary Information

Grafting of monocarboxylic substituted polychlorotriphenylmethyl radicals on a COOH-functionalized self assembled monolayer through copper (II) metal ions.

O. Shekhah¹, N. Roques², V. Mugnaini², C. Munuera², C. Ocal², J. Veciana^{2*}, C. Wöll^{1*}

¹*Ruhr-Universität Bochum, Institut für Physikalische Chemie 1, Universitätsstrasse 50, D-44801 Bochum, Germany and* ²*Institut de Ciència de Materials de Barcelona (CSIC), Campus Universitari de Bellaterra, E-08193 Cerdanyola, Spain*

Figure ESI-1. In black (top) the CW EPR spectrum of **S2**. EPR parameters: frequency: 9.40543GHz; 2048 points; Modulation Amplitude 3G; number of scans: 20; power 7.86mW. The position of this line corresponds to $g=2.0037$. In grey (bottom) the CW EPR spectrum of **S1**. The same EPR parameters: as for **S2** were used. The minor signal arising from the substrate used of the **S1** substrate has been subtracted to get the signal of **S2** reported in the text.

Figure ESI-2. Contact angle measurements for **S1** (ca 18°), **S3** (ca 43°) and **S4** (ca 80°).

Figure ESI-3. IRRAS spectra of a) **S1** (as a reference), b) **S3**, and c) **S4**.

Figure ESI-4. Negative mode TOF-SIMS mass spectra of a) **S4** and of b) **S3** and c) bare gold. Three fragments are clearly visible: the one at m/z 718, corresponding to the loss of the carboxylate group (m/z 44). The peak at m/z 693 corresponds to the loss of a chlorine atom (m/z 35) and the one at m/z 658 corresponds to the loss of another chlorine atoms ($693-35=658$). All the fragments show the isotopic distribution expected for 14, 13 and 12 chlorine atoms.

Figure ESI-5. C1s, O1s, Cl2p, Au4f and Cu2p XP spectra of **S1** (as a reference), **S3** and **S4**.

Figure ESI-6. In black (a) the CW EPR spectrum of **S4**. EPR parameters: frequency: 9.40995 GHz; 1024 points; Modulation Amplitude 3G; number of scans: 16; power 19.77mW. The position of this line corresponds to $g=2.0026$. In grey (b) the CW EPR spectrum of **S3**. To record this spectrum the same EPR parameters as for **S4** were used. In dark grey (c) the spectrum of **S1** recorded under the same experimental conditions. A minor signal arising from the substrate was recorded.

Figure ESI-7. In black (a) the CW EPR spectrum of $\text{Cu}(\text{AcO})_2$ drop casted on MHDA functionalized gold/silicon substrate. EPR parameters: frequency: 9.407005 GHz; 1024 points; Modulation Amplitude 3G; number of scans: 8; power 19.77mW. In grey (b) the CW EPR spectrum of the MHDA functionalized substrate under the same experimental conditions.

Figure ESI-8. Upper panel: Topographic SFM images of as prepared samples a) **S1**, b) **S2**, c) **S3**, d) **S4**. Bottom panel: Height histograms of the corresponding images (insets) after tip scratching at 150-200nN each sample surface over areas of 300nmx300nm. As explained in the text this procedure is used to determine the film thickness in each case.