

Electronic supporting information

Formation of gold nanoparticles in polymeric nanowires by low-temperature thermolysis of gold mesitylene

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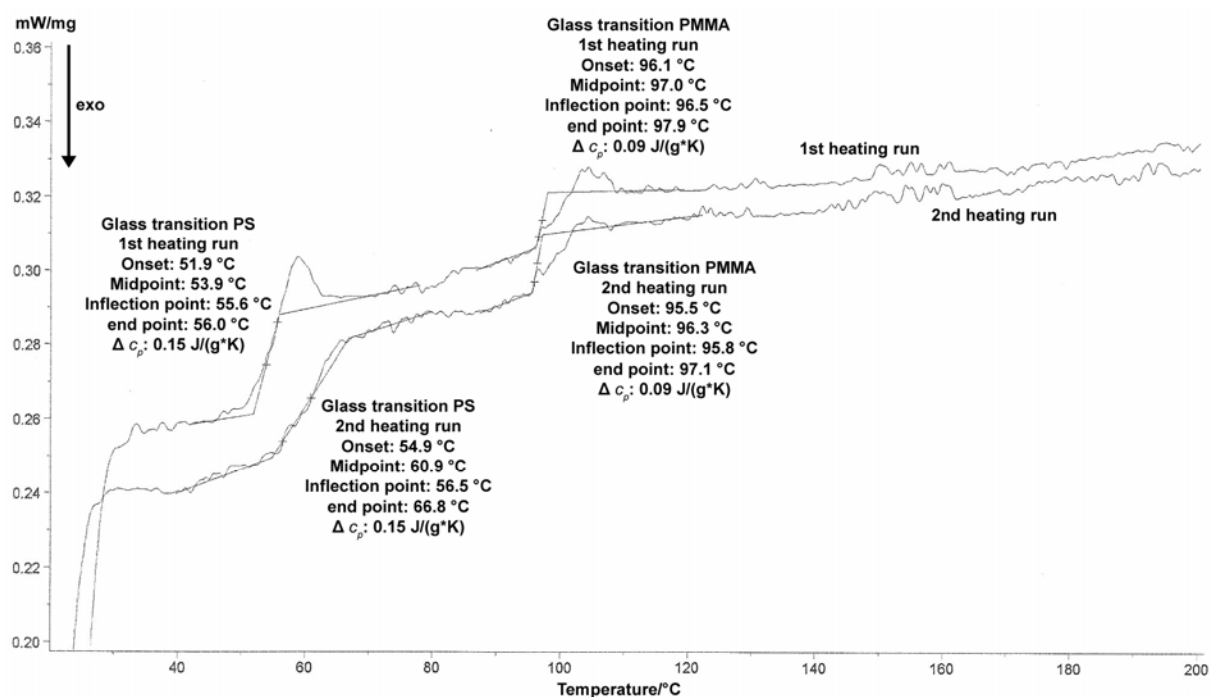


Figure S1. First and second differential scanning calorimetry heating runs of bulk PS-*b*-isoPMMA (Netzsch DCS 404 C; heating and cooling rates 10 K/min).

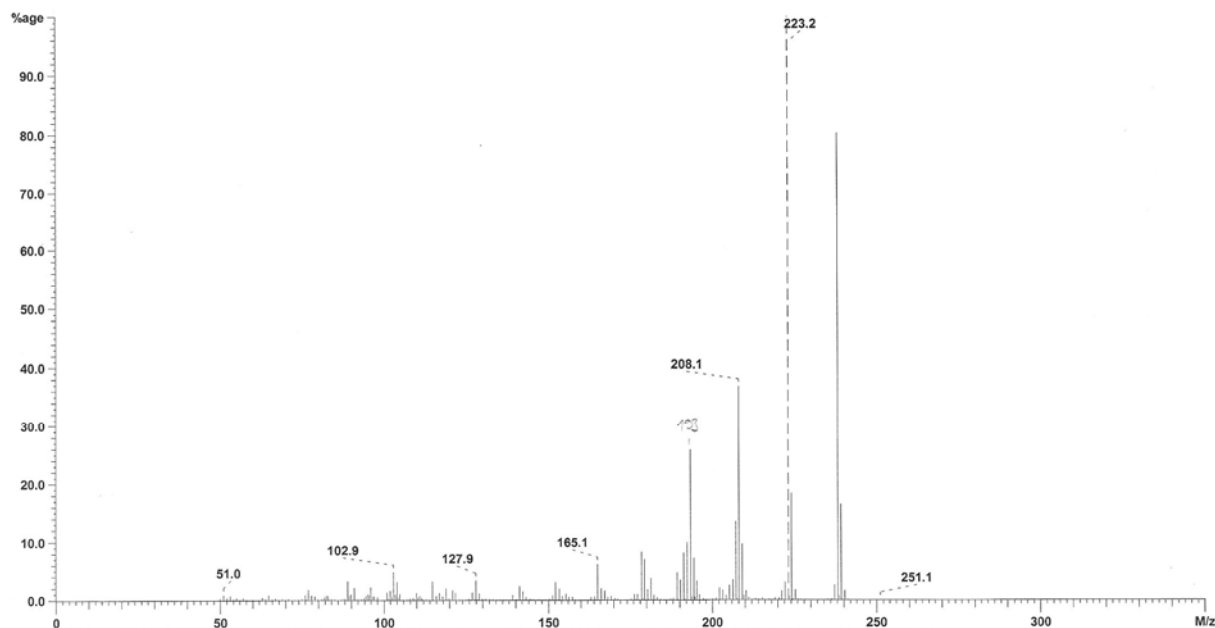


Figure S2: Mass spectrum of the degradation product of gold mesitylene recorded with a Varian MAT 711 mass spectrometer. The degradation product was isolated as a colourless crystalline solid at the cold end of a Schlenk tube within which the gold mesitylene contained in gold mesitylene/PS-*b*-isoPMMA nanowires located in AAO was thermolized. The peaks can be assigned to 2,2',4,4',6,6'-hexamethylbiphenyl according to the literature^{1,2} (EI-MS: m/z 238 $[M]^+$, 223 $[M-CH_3]^+$, 208 $[M-2 CH_3]^+$).

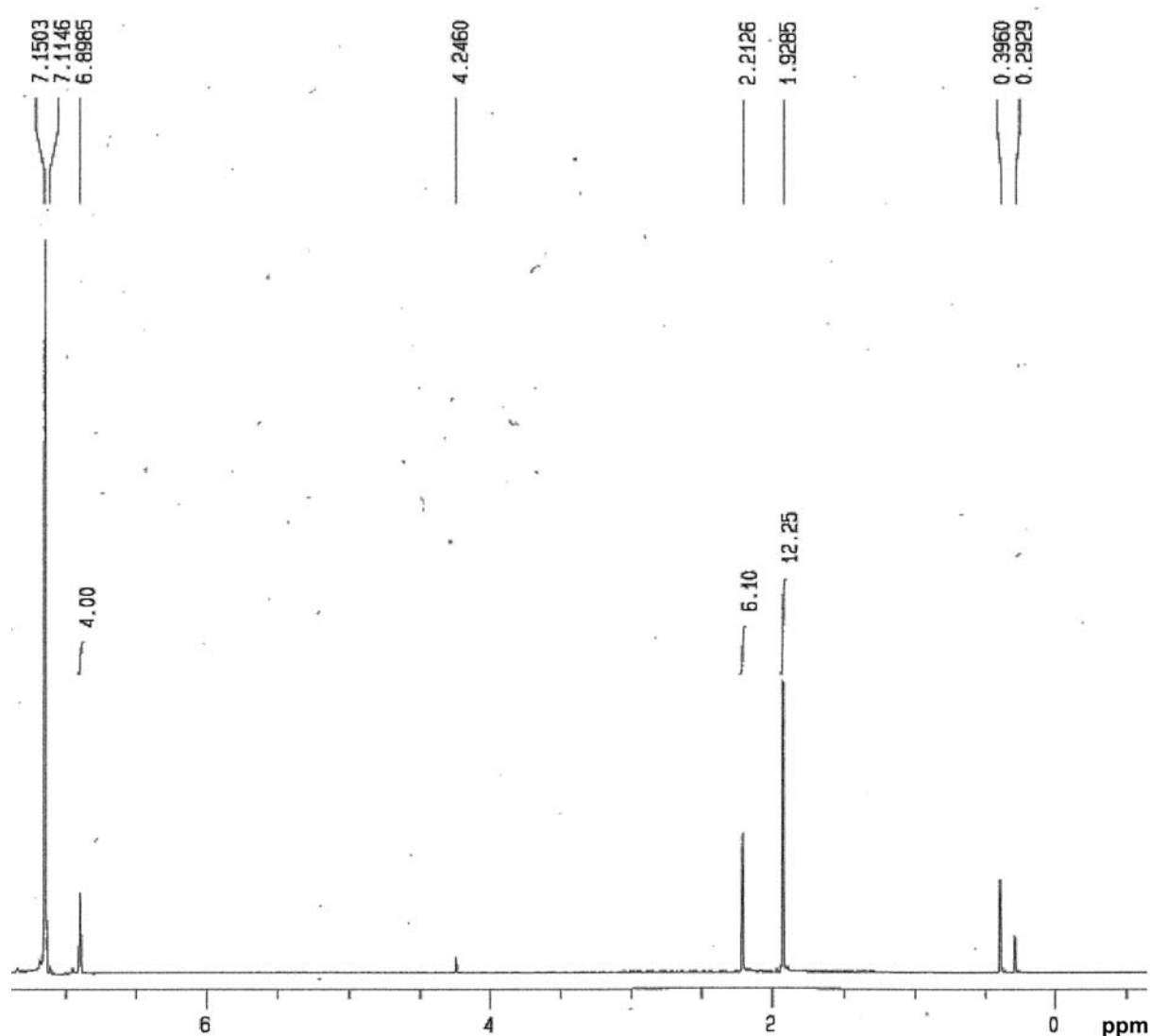


Figure S3: $^1\text{H-NMR}$ spectrum of the degradation product of gold mesitylene in deuterated benzene recorded with a JEOL 400 MHz NMR spectrometer. The degradation product was isolated as a colourless crystalline solid at the cold end of a Schlenk tube within which the gold mesitylene contained in gold mesitylene/PS-*b*-isoPMMA nanowires located in AAO was thermolized. The signals can be assigned to 2,2',4,4',6,6'-hexamethylbiphenyl according to the literature.^{1,2} $^1\text{H-NMR}$ (C_6D_6 , 400 MHz): $\delta = 6,90$ ppm (*s*, 4 H, aryl-H); 2,21 ppm (*s*, 6 H, *p*-CH₃); 1,93 ppm (*s*, 12 H, *o*-CH₃).

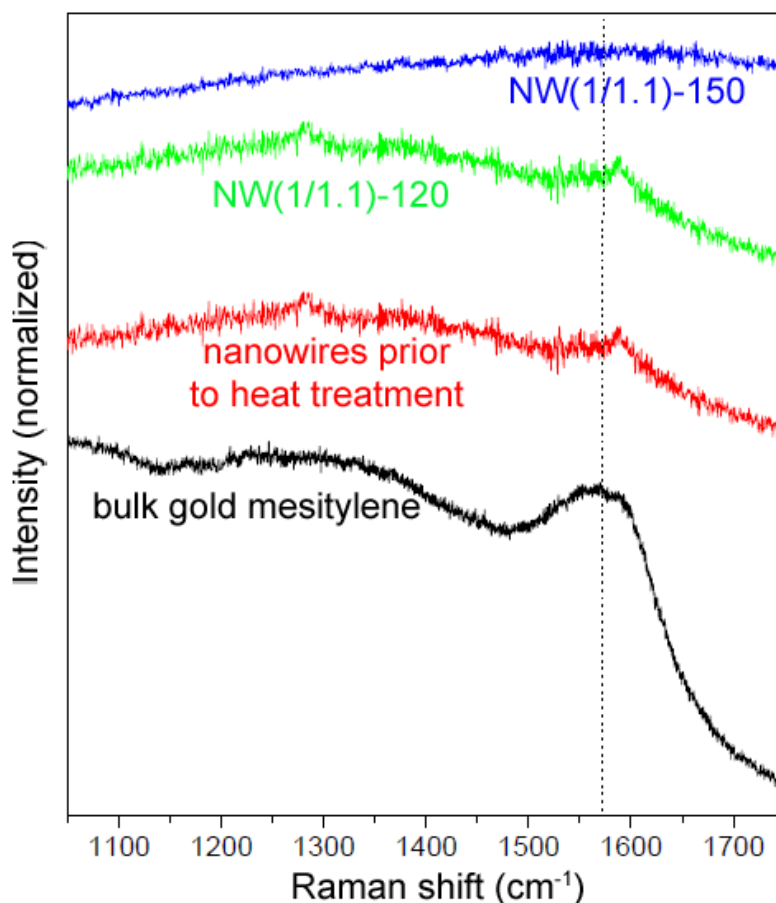


Figure S4. Raman spectra of gold mesitylene powder (black curve) as well as of *NW(1/1.1)-120* located in AAO (green curve), *NW(1/1.1)-150* located in AAO (blue curve) and gold mesitylene/PS-*b*-isoPMMA nanowires without any heat treatment located in AAO (red curve) obtained from the same gold mesitylene/PS-*b*-isoPMMA solution. The asymmetric deformation vibration of the methyl groups at the phenyl rings of the mesitylene ligands at 1571 cm⁻¹ appears in the spectra of gold mesitylene powder, of gold mesitylene/PS-*b*-isoPMMA nanowires without any heat treatment and of *NW(1/1.1)-120* but not in the spectrum of *NW(1/1.1)-150*. The Raman spectra were acquired as described in the experimental part of the main manuscript (excitation wavelength: 532 nm).

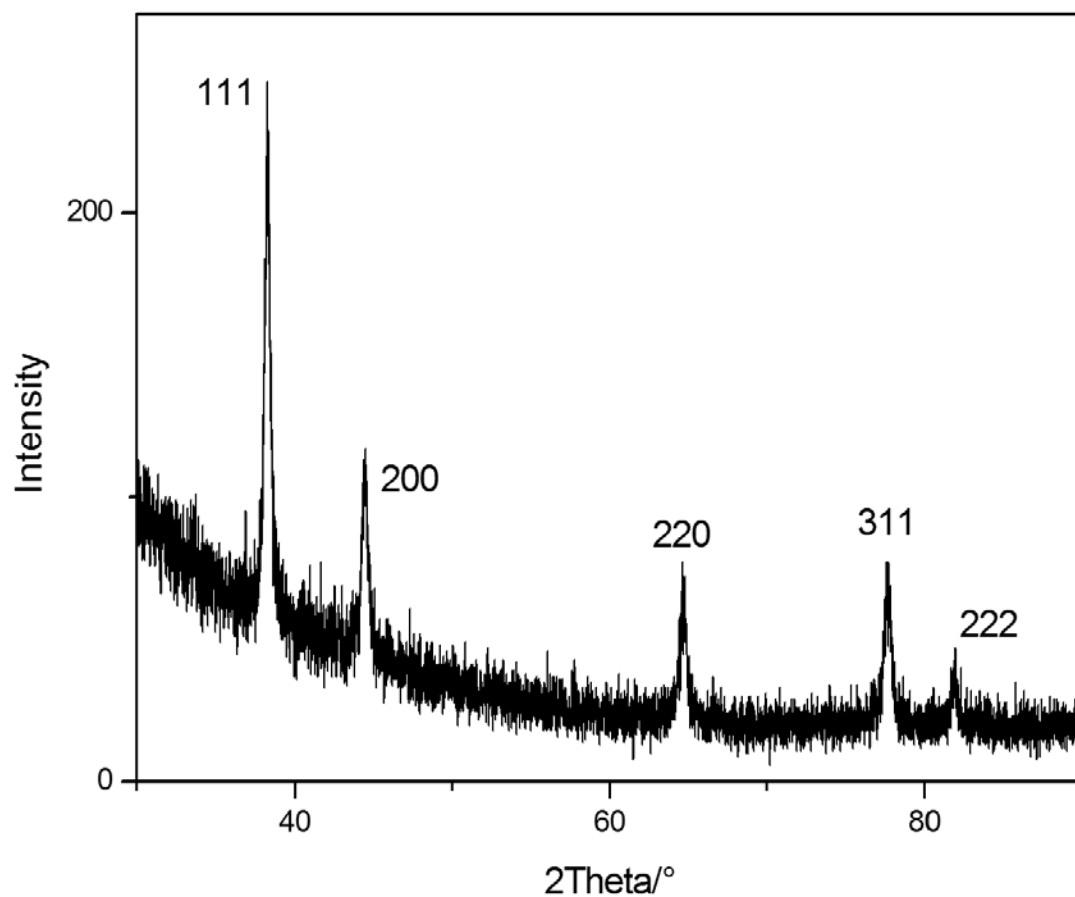


Figure S5. X-ray powder diffraction pattern of released, randomly oriented $NW(1/1.9)-200$ obtained with a STOE STADI P transmission powder diffractometer in theta/2theta geometry using $\text{Cu-K}\alpha$ radiation.

¹ G. Cahiez, C. Chaboche, F. Mahuteau-Betzer and M. Ahr, *Org. Lett.* **2005**, *7*, 1943-1946.

² Y. Miyake, M. Wu, M. J. Rahman, Y. Kuwatani and M. Iyoda, *J. Org. Chem.* **2006**, *71*, 6110-6117.