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Synthesis and characterization of Cu_3N nanoparticles using pyrrole-2-carbaldpropyliminato Cu(II) complex and $Cu(NO_3)_2$ as single-source precursors: the search for an ideal precursor

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Supporting information

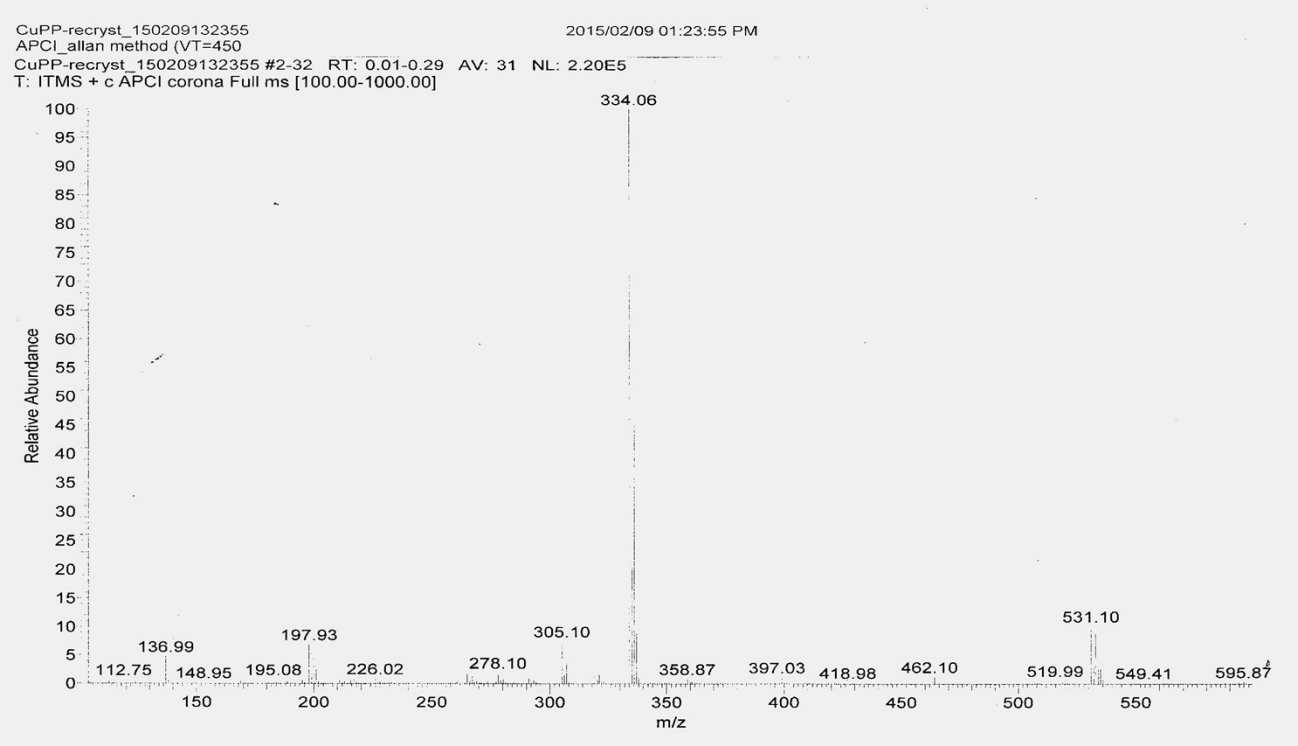

Fig. S1: Mass spectrum of the PPC complex.

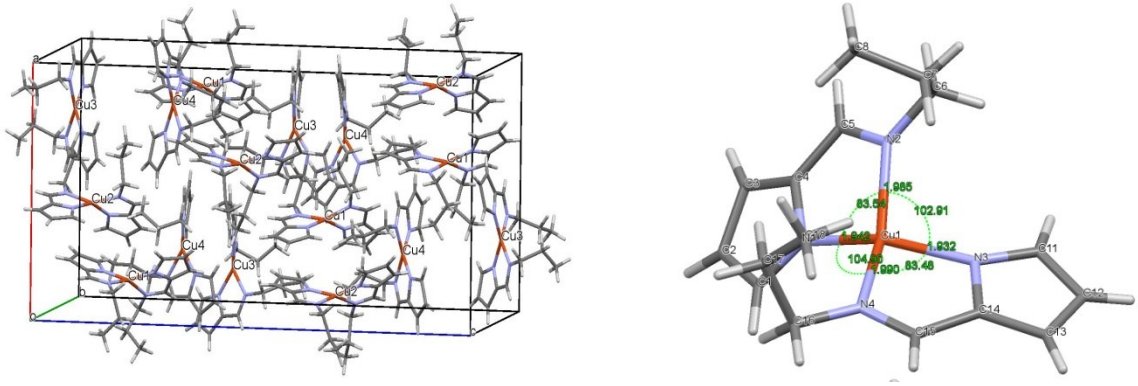

Fig. S2: Crystal structure showing (a) packing of the four different molecules (b) central bond angles and distances on a molecule of the synthesized PPC complex.

Table S1: Crystal data and detailed structure refinement for synthesized and published complex [1]

	Synthesized	**Published**
Empirical formula	$C_{16}H_{22}N_4Cu$	$C_{16}H_{22}N_4Cu$
Formula weight	333.93	333.93
Temperature (K)	293	293
Wavelength (Å)	0.71073	0.71073
Crystal system	orthorhombic	orthorhombic
Space group	P $2_12_12_1$	P $2_12_12_1$
Unit cell dimensions		
***a* (Å)**	14.6108(5)	14.6053917)
***b* (Å)**	15.9605(7)	15.9508(19)
***c* (Å)**	28.9556(11)	28.957(3)
***β* (°)**	90	90
Volume (Å^3)	6752.3(5)	6746.0(13)
Z	16	16
D_{calc} **(g/cm^3)**	1.314	1.315
Absorption coefficient (mm^{-1})	1.293	1.009
***F*(0 0 0)**	2800	2800
Crystal size (mm)	0.30 × 0.20 × 0.03	0.39 × 0.40 × 0.42
***θ* Range for data collection (°)**	1.406–27.998	1.41–28.32
Index ranges	$-19 \leqslant h \leqslant 19$, $-21 \leqslant k \leqslant 20$, $-38 \leqslant l \leqslant 33$	$-19 \leqslant h \leqslant 16$, $-20 \leqslant k \leqslant 19$ $-20 \leqslant l \leqslant 38$
Reflections collected	54 025	44605
Independent reflections (R_{int})	16 264 (0.057)	16033 (0.0490)
Completeness to *θ* (%)	100.0 (θ = 25.242°)	97.1 (θ = 28.32°)
Maximum and minimum transmission	-	0.8237 and 0.6884
Goodness-of-fit on F^2	0.886	1.031
Final *R* indices	R_1 = 0.0322, wR_2 = 0.0580	R_1 = 0.0496, wR_2 = 0.1135
***R* indices (all data)**	R_1 = 0.0541, wR_2 = 0.0545	R_1 = 0.0787, wR_2 = 0.1285

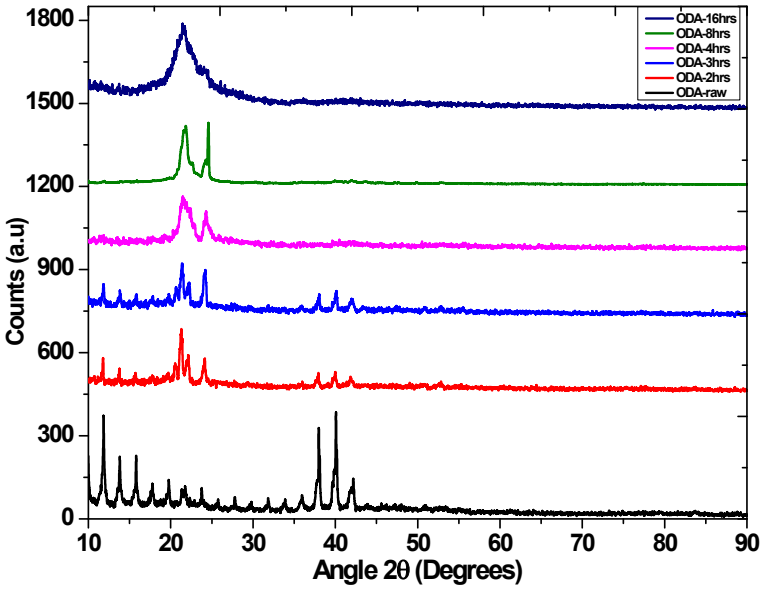

Fig. S3: XRD patterns of products of decomposition of octadecylamine at 260 °C under N_2 (g) flow

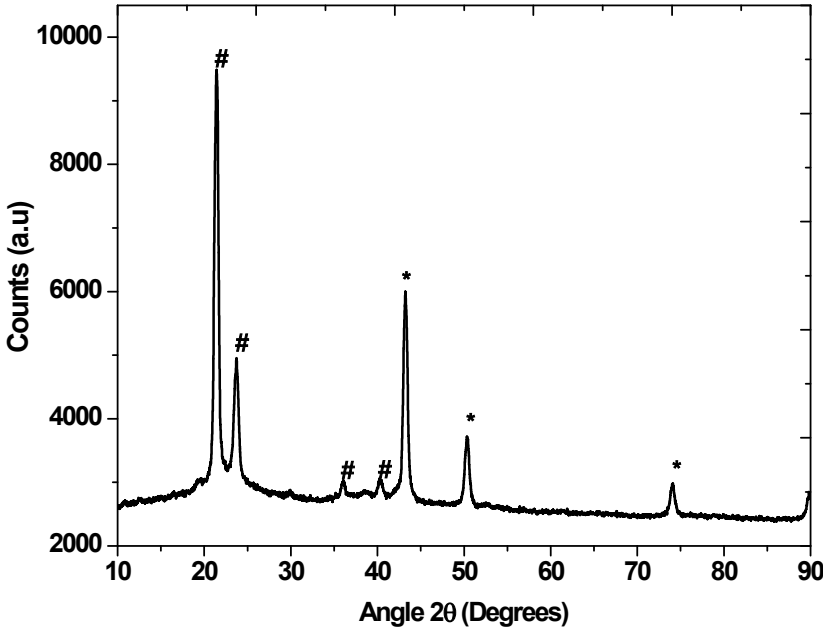

Fig. S4: XRD pattern of a product obtained from the thermolysis of $Cu(CO_2CH_3).H_2O$ in ODA at 260 °C (# ODA and * Cu) JCP2.2CA:01-070-3038.

References

[1] Cambridge Crystallographic Data Centre CCDC-241810.