Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Facile preparation of copper nitride powders and nanostructured films

SUPPLEMENTARY INFORMATION

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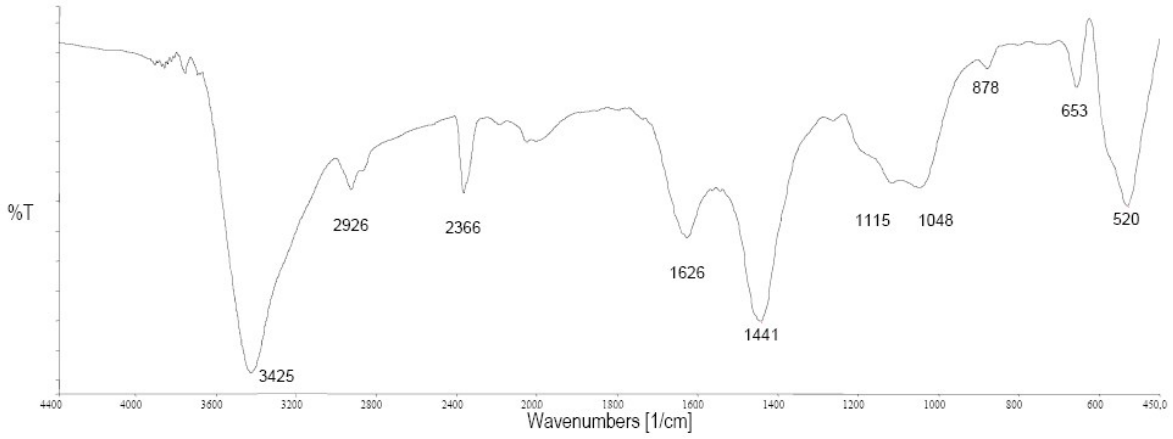

Figure S1. FT-IR spectrum of $Cu(CF_3COO)_2$ after ammonolysis at 250 °C (sample **1**).

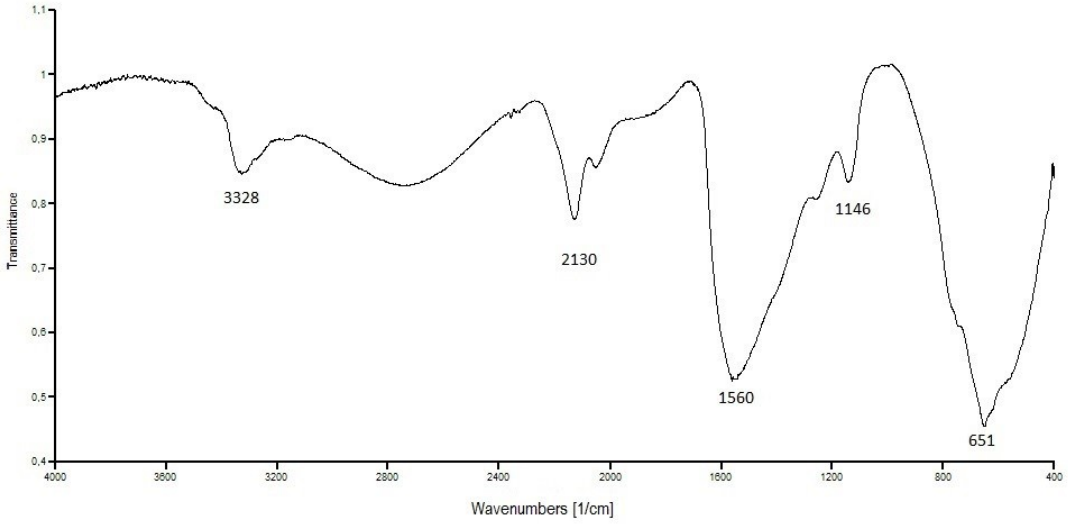

Figure S2. FT-IR spectrum of $Cu(CF_3COO)_2$ after ammonolysis at 300 °C (sample **2**).

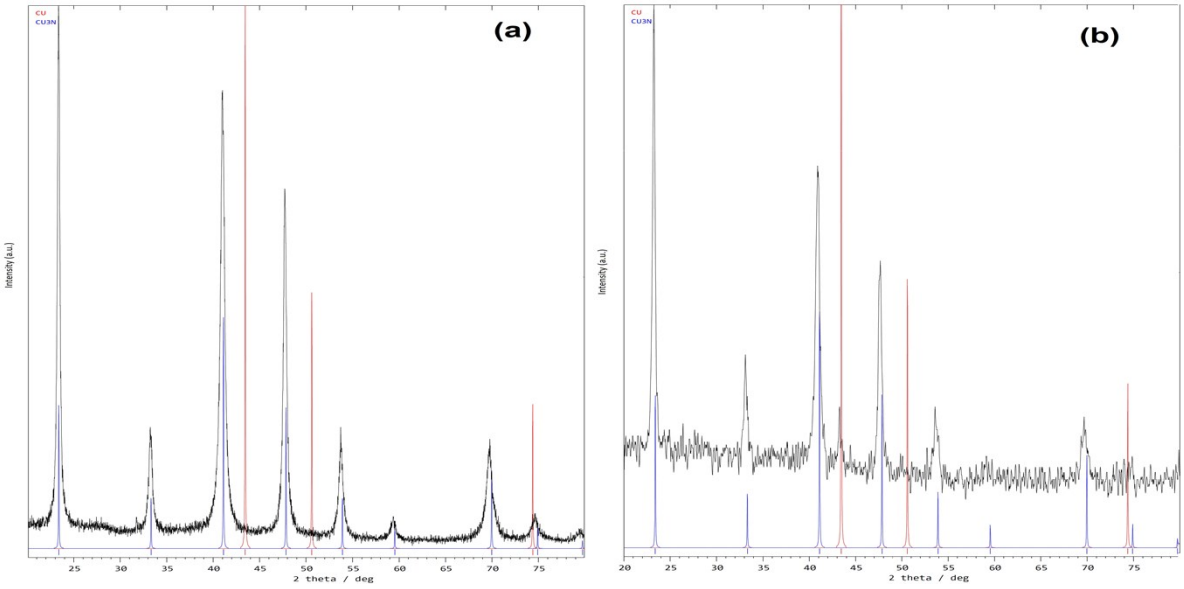

Figure S3. Powder X-ray diffraction pattern of (a) **4** (prepared at 310 °C, 300 min), (b) **5** (350 °C, 180 min) and simulated powder patterns for Cu_3N (blue) and Cu (red).

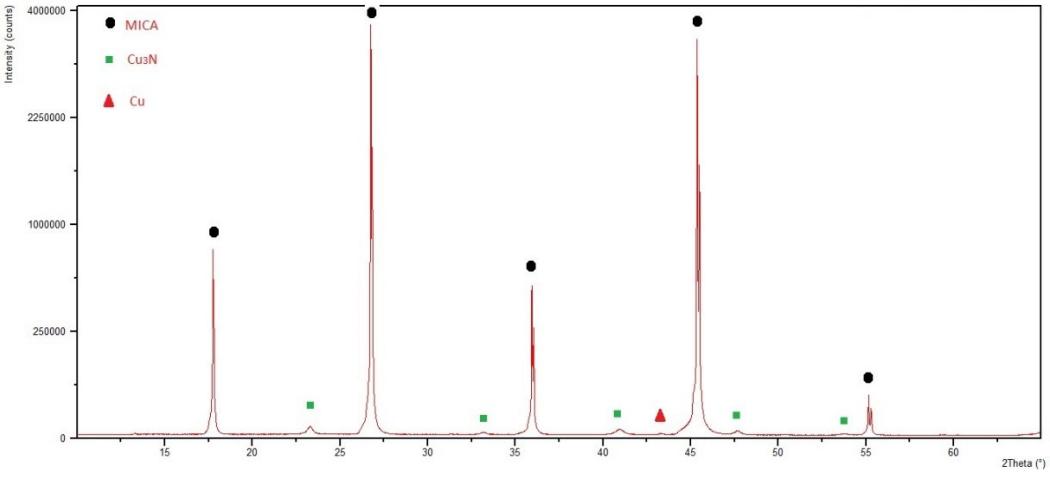

Figure S4. Powder X-ray diffraction pattern of $Cu(CF_3COO)_2$ film on mica after ammonolysis at 310 °C.

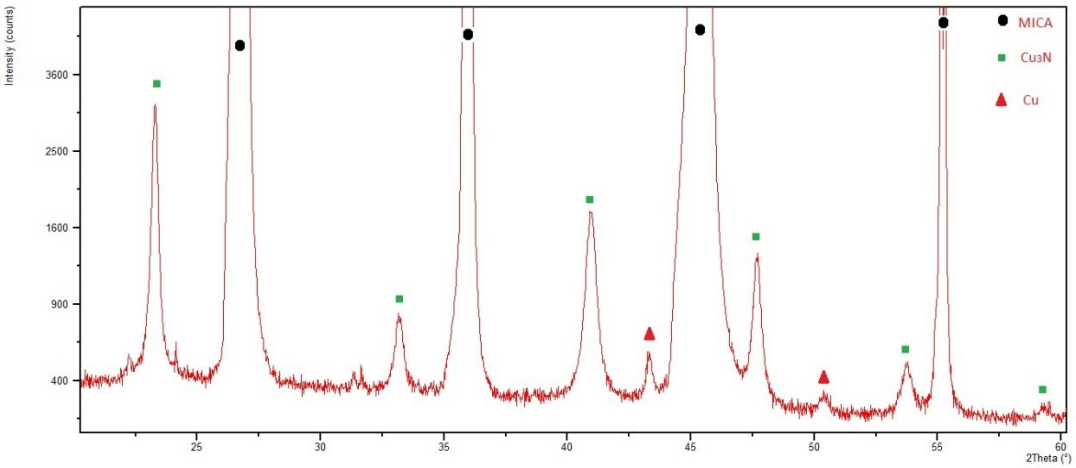

Figure S5. Enlarged powder X-ray diffraction pattern of $Cu(CF_3COO)_2$ film on mica after ammonolysis at 310 °C.

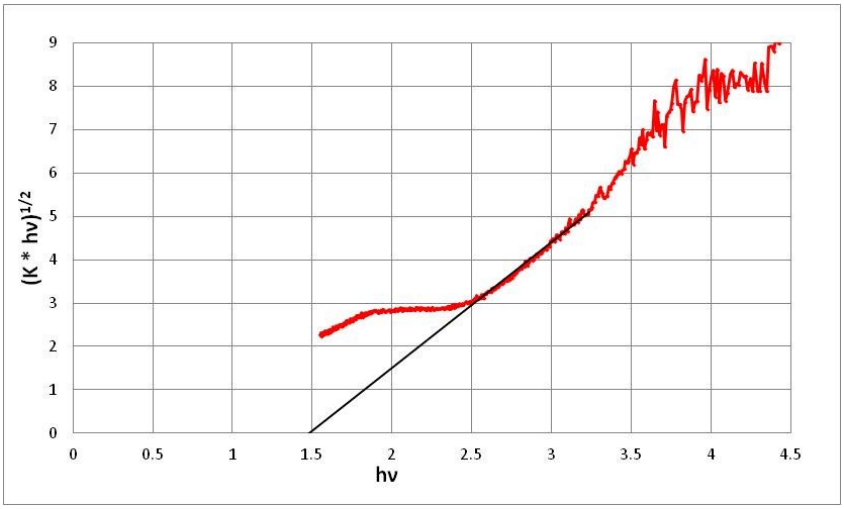

Figure S6. Band gap determination using plots of modified Kubelka Munk (K-M) function versus light energy (indirect optical transition): $(K * h\upsilon)^{1/2} = f(h*\upsilon)$, where $K = (1-R)^2/2R$, the reflectance transformed according to Kubelka Munk and R is reflectance (%).

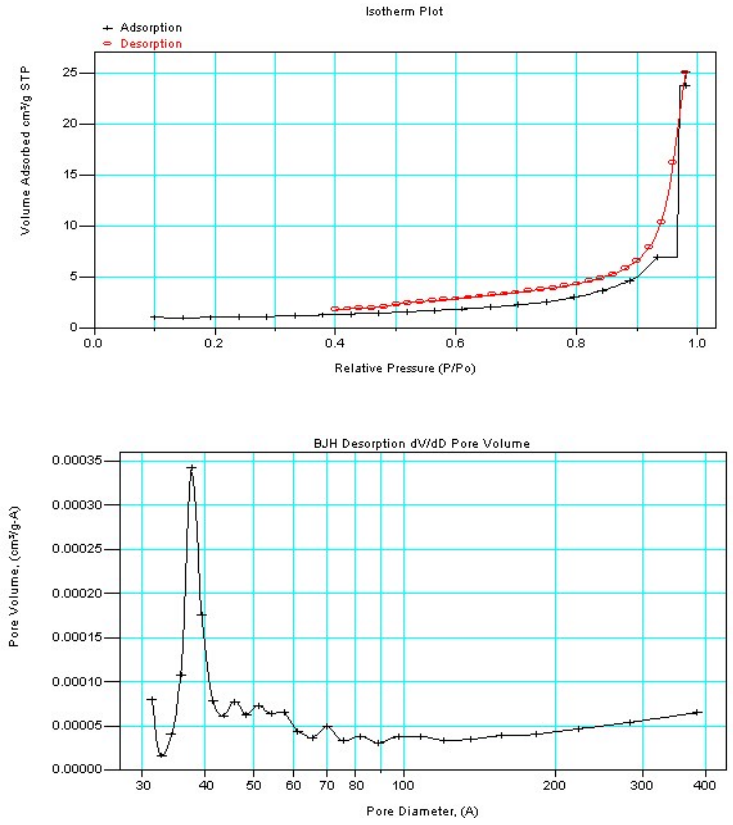

Figure S7. Nitrogen adsorption/desorption isotherms and pore size distribution measured for sample **3**.

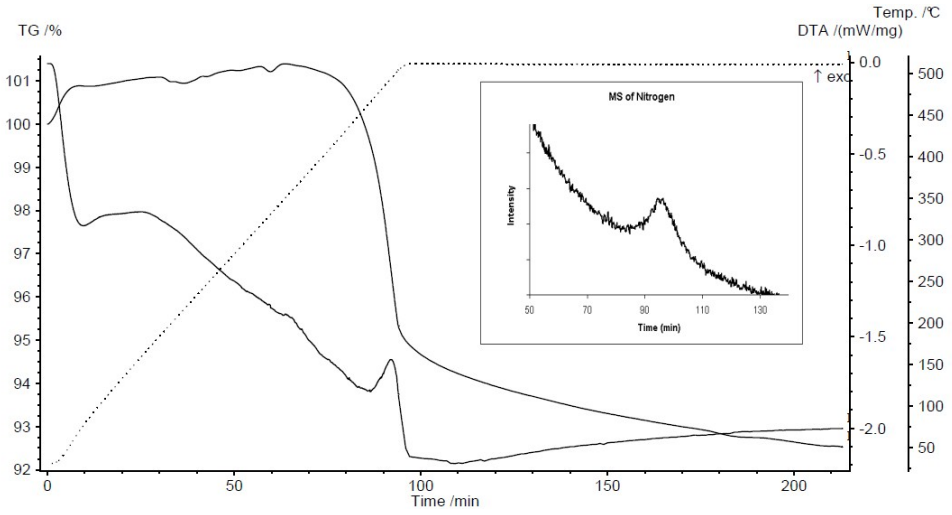

Figure S8. TG-DTA curves for Cu_3N (**3**) heated under flowing argon. A plot of N_2 concentration vs. time from the mass spectrum of the evolved gas is shown in the inset.

Table S1. Atomic parameters from the Rietveld refinement for Cu_3N (**3**).

Atom	Site	Site occupancy factor	U_{iso} / Å^2
Cu	3*d*; (½, 0, 0)	1	0.015(4)
N	1*a*; (0,0,0)	1	0.0085(4)

Table S2. Calculated interatomic distances from the Rietveld refinement for Cu_3N (**3**).

Atoms	Distance / Å
Cu-N	1.8894(1)
Cu-Cu	3.7788(2)
N-N	3.7788(2)

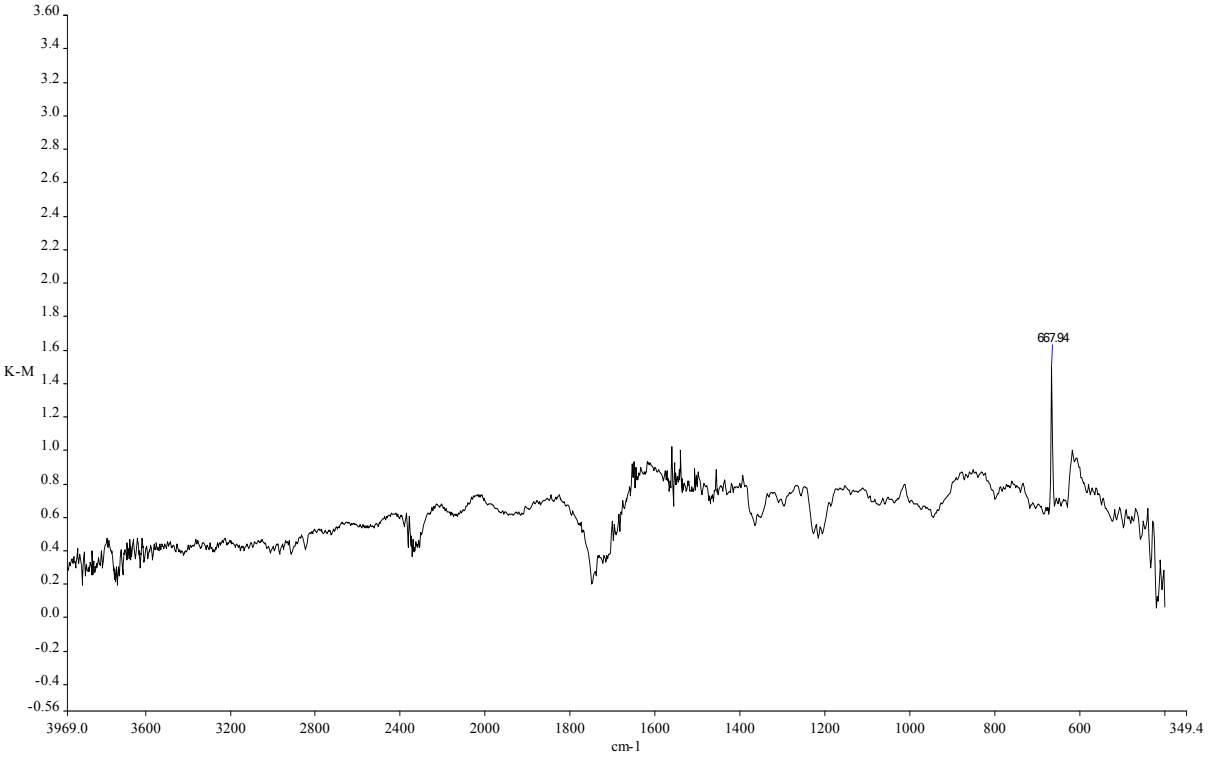

Figure S8. DRIFT spectrum from a $Cu(CF_3COO)_2$ film deposited on Si (60 s, 4000 rpm) after ammonolysis at 300 ^oC.