

Synthesis of copper(II) acetylacetonate

Summary of the analysed protocols

$\text{CuCl}_2 + 2(\text{Hacac}) \rightarrow [\text{Cu}(\text{acac})_2] + 2\text{HCl}$	(1)
$\text{CuSO}_4 + 2(\text{Hacac}) \rightarrow [\text{Cu}(\text{acac})_2] + \text{H}_2\text{SO}_4$	(2)
$\text{Cu}(\text{NO}_3)_2 + 2(\text{Hacac}) \rightarrow [\text{Cu}(\text{acac})_2] + 2\text{HNO}_3$	(3)
Protocol A¹	
Reaction (R₁): equation (1), stoichiometric proportions of reagents, water, methanol and sodium acetate (auxiliary substances), T ~ 80 °C	
Isolation (I₁): cooling (ice bath) → filtration → washing (cold water) → drying (oven at 110 °C)	
Purification (Pu₁): recrystallization – dissolution (methanol) → reflux → cooling (ice bath) → filtration → washing (cold methanol) → drying (air)	
Protocol B²	
Reaction (R₁): ≡ Pr A (scale decreased to half)	
Isolation (I₁): ≡ Pr A	
Purification: not prescribed	
Protocol C³	
Reaction (R₁): ≡ Pr A (scale 10 times reduced)	
Isolation (I₂): ≡ Pr A (but air drying is used, instead of using the oven)	
Purification (Pu₂): recrystallization – dissolution (methanol) → reflux → cooling (room temperature) → filtration (suction) → washing (cold methanol) → drying (air)	
Protocol D⁴	
Reaction (R₂): equation (2), stoichiometric proportions of reagents, water and sodium hydroxide solution (solvents), room temperature	
Isolation (I₃): filtration (suction)	
Purification (Pu₃): recrystallization – dissolution (dioxan) → drying (air)	
Protocol E⁵	
Reaction (R₂): ≡ Pr D (scale enlarged to double)	
Isolation (I₃): ≡ Pr D (scale enlarged to double)	
Purification (Pu₃): ≡ Pr D (scale enlarged to double)	
Protocol F⁶	
Reaction (R₃): equation (3), 358% exc. acetylacetonate, water (solvent), room temperature	
Isolation (I₄): filtration (suction) → washing (water, ethanol) → drying (desiccator)	
Purification: not prescribed	

^a → – Sequential

References

- (1) Faculdade de Ciências e Tecnologia da Universidade de Coimbra, <https://woc.uc.pt/quimica/getFile.do?tipo=2&id=1438> (accessed February 2011).
- (2) Glidewell, C.; “Metal Acetylacetonate Complexes: Preparation and Characterization” in Woollins, J., Ed.; *Inorganic Experiments*, 2nd ed., Wiley-VCH, Weinheim, 2003; Exp. 3.16.
- (3) Radboud University of Nijmegen, www.orgchem.science.ru.nl/molmat/mm-web/srm4.doc (accessed April 2011).
- (4) University of Malaya, <http://www.kimia.um.edu.my/images/kimia/lab%20manual/level%202/Lab%20Manual%20Yr%202%20Inorganica.pdf> (accessed May 2011).
- (5) Potts, R. A. Synthesis and Spectral Study of Copper(II) Complexes. *J. Chem. Educ.* **1974**, *51* (8), 539-540.
- (6) University of British Columbia, <https://www.chem.ubc.ca/faculty/wassell/CHEM415MANUAL/Experiment8/Experiment8.htm> (accessed May 2011).