

# Synthesis of barium peroxide

## Summary of the analysed protocols

$\text{BaCl}_2 + \text{H}_2\text{O}_2 + 8\text{H}_2\text{O} \rightarrow \text{BaO}_2 \cdot 8\text{H}_2\text{O} + 2\text{HCl}$	(1)
$\text{Ba} + \text{O}_2 \rightarrow \text{BaO}_2$	(2)
<b>Protocol A<sup>1</sup></b>	
<b>Reaction (R<sub>1</sub>):</b> equation (1), 123% exc. hydrogen peroxide, ammonium hydroxide solution and distilled water (solvents), T ~ 0 °C	
<b>Isolation (I<sub>1</sub>):</b> filtration (suction) → washing (cold distilled water → ethanol → ethyl ether) → drying (air)	
<b>Purification:</b> not prescribed	
<b>Protocol B<sup>2</sup></b>	
<b>Reaction (R<sub>2</sub>):</b> equation (1), stoichiometric proportions of barium chloride and hydrogen peroxide, ammonium hydroxide solution, distilled water and nitrogen (auxiliary substances), T ~ 0 °C	
<b>Isolation (I<sub>2</sub>):</b> filtration → drying (at 150 °C)	
<b>Purification:</b> not prescribed	
<b>Protocol C<sup>3</sup></b>	
<b>Reaction (R<sub>3</sub>):</b> equation (2), stoichiometric proportions of barium and oxygen, petroleum ether and concentrated sulphuric acid (auxiliary substances), T ~ 500-550 °C	
<b>Isolation (I<sub>3</sub>):</b> cooling	
<b>Purification:</b> not prescribed	

<sup>a</sup> → – Sequential

## References

- (1) Instituto Superior Técnico – Universidade Técnica de Lisboa, <https://fenix.ist.utl.pt/disciplinas/lq-i/2010-2011/I-semester> (accessed February 2011).
- (2) Kopnin, E.M. *et al.* New Family of Au-Based Superconductors  $\text{AuBa}_2\text{Ca}_{n-1}\text{Cu}_n\text{O}_{2n+3}$  (n = 3,4). *Chem. Mater.*, **2001**, *13*, 2905-2908.
- (3) Pass, G.; Sutcliffe, H. *Practical Inorganic Chemistry – 2<sup>nd</sup> edition*. Chapman and Hall: London, 1974, pp. 34-35.