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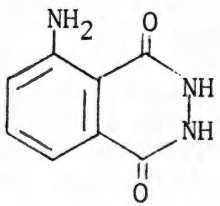
Chemiluminescence

Erwin Richter
University of Northern Iowa

CHEMILUMINESCENCE

Erwin Richter
Dept. of Chemistry
University of Northern Iowa
Cedar Falls, Iowa 50614

A dramatic chemiluminescence is described by Huntress, *et al.*,[1] which is based on the basic oxidation of luminol.[2] Luminol is 3-aminophthalhydrazide or more correctly 5-amino-2,3-dihydro-1,4-phthalazinedione. Its structure is



The materials necessary for performance of the demonstration are:

0.1% luminol (w/v)
5% NaOH (w/v)
2.5% potassium ferricyanide (w/v)
3% H_2O_2

From the above the following reacting solutions are prepared.

Solution 1

100 ml of 0.1% luminol plus 5 ml of 5% NaOH with enough water to make 1 liter total volume.

Solution 2

10 ml of 3% H_2O_2 plus 10 ml of 2.5% potassium ferricyanide with enough water to make 1 liter total volume.

The demonstration is most effective when performed in a darkened room. Pour solutions 1 and 2 simultaneously through a funnel into a third vessel. Color brilliance can be enhanced by adding some potassium ferricyanide crystals to the mixture.

To show that the light is cold light, solutions 1 and 2 can be poured over a block of ice. Sufficient light results in the reaction so that one may read a newspaper by it.

References:

[1]Huntress, E.H., *et al.*, *J. Chem Ed*, *11*, 143 (1934).
[2]Luminol may be purchased from Eastman.