

Non-Existence of 1,10-Phenanthroline-N,N'-dioxide

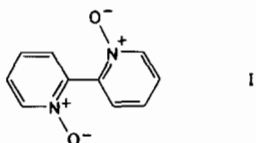
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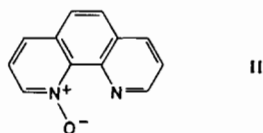
Having recently seen two more manuscripts submitted for publication which describe complex ions allegedly containing as a chelating ligand 1,10-phenanthroline-N,N'-dioxide, an unknown compound, it is necessary to reiterate some facts which should be well known.

2,2'-bipyridyl-N,N'-dioxide (I) exists and is readily obtained [1] (presumably *via* the monoxide) by full



reaction of 2,2'-bipyridyl with peroxide reagents although explosions have occurred [2] when following a published procedure [3] for the monoxide.

The same exhaustive procedure, when applied to 1,10-phenanthroline, gives only the monoxide, II.



The N,N'-dioxide of 1,10-phenanthroline has not yet been made.

The procedure (peroxidation of 1,10-phenanthroline) used by Linsker and Evans, which they believed [4] to give the dioxide (isolated as its picrate which was analyzed) was shown [5] by Maerker and Case to give only the monoxide. Experiments elsewhere [6] and here agree.

The notion [7, 8] that the exhaustive procedure for di-N-oxidation of 2,2'-bipyridyl gives *mutatis mutandis* di-N-oxidation of 1,10-phenanthroline is completely wrong.

The situation is fully described [9] by Summers. 1,10-phenanthroline-N,N'-dioxide is not yet a known compound. Several recent descriptions of its (*sic*) complex compounds with metal ions are in learned journals, including this one.

All such are wrong.

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