Cibacron Blue 3GA

CAS nr: 84166-13-2

Structure:

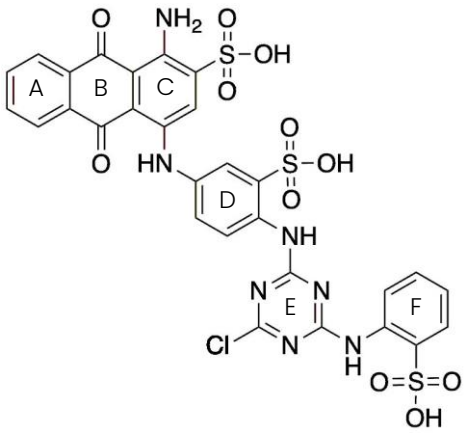

Fig. 1. *Structural representation of Cibacron Blue 3G-A*

Synthesis and structure

Cibacron blue 3GA dye consists of anthraquinone backbond (A, B, and C) link to phenyl (D), triazine (E), and phenyl (F) rings interconnected by C-N bonds and adorn by amine and sulfate functional moieties, as shown in Figure 1. It can be synthesized from commercially available bromaminic acid (1-amino-4-bromoanthraquinone-2-sulfonic acid), an essential precursor to cibacron blue dye. The reaction consists of three consecutive steps, and the first step is begun by a copper-mediated nucleophilic substitution reaction of 2,5-diaminobenzenesulfonic acid to bromaminic acid to give intermediate 1-amino-4-((4-amino-3-sulfophenyl)amino)-anthraquinone-2-sulfonic acid. It is followed by the second nucleophilic addition to cyanuric chloride and finally, the substitution of orthanilic acid to confer a final cibacron blue 3GA, an ortho derivative of anthraquinone dyes. The ortho is mainly affiliated to the position of the sulfate group on the ring F (Figure 1).

Spectral properties

Cibacron blue 3G-A exhibits a broad absorption band centered at 602 nm (in water) see Fig. 2.

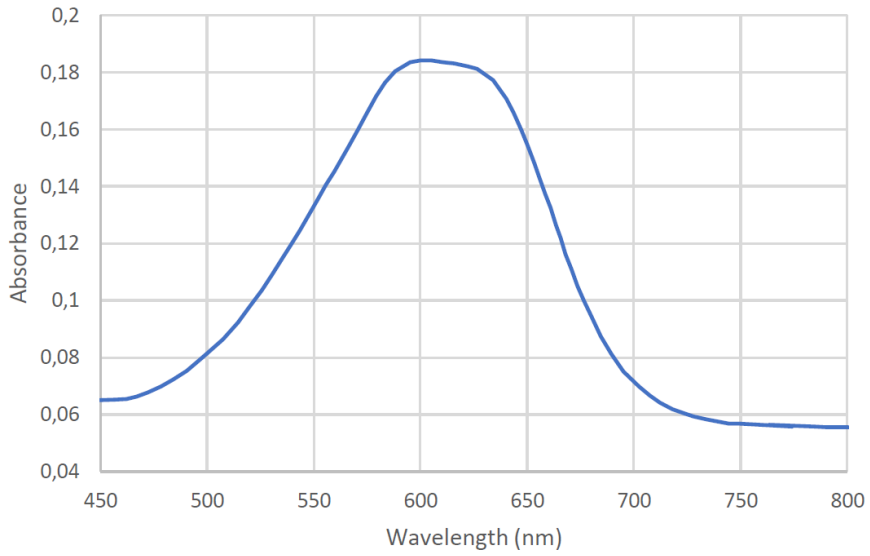

Fig. 2. UV-absorption spectrum of Cibacron blue 3G-A obtained in water (0.03 mM solution).

Stability

No studies on the stability of cibarcon blue 3G-A have been carried out specifically. However, it is known to withstand biological and chemical degradation. It suggest that the Cibacron blue 3G-A is quite stable, nevertheless, one must not forget to store in the dark area and dry condition (desicator) for longer shelf life.

Applications

Cibacron blue 3G-A has been employed in the textile industry for many years. It has shown tremendous protein binding capacity and can readily be immobilized on the polymer containing a hydroxyl group. Due to its aforementioned properties, it has been used as a ligand in affinity chromatography for the purification of proteins and enzymes. It was also reported to apply for the purification of biopolymers (e.g., interferons and albumins).