

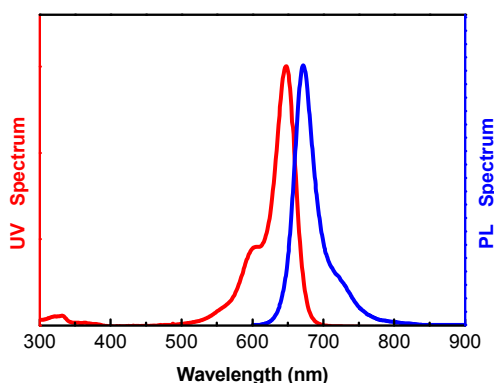
## Certificate of Analysis

### Flamma™ Fluor FR-648

#### 1. Product Information

Code No.	PWA1209
Formula	C <sub>37</sub> H <sub>47</sub> N <sub>3</sub> O <sub>9</sub> S <sub>3</sub>
Molecular Weight	773.98
Absorbance Wavelength Maximum	647nm(distilled water)
Emission wavelength maximum	672nm(distilled water)
Molar Extinction Coefficient	2.32 × 10 <sup>5</sup> M <sup>-1</sup> cm <sup>-1</sup>
Usable pH range	6-12(recommended pH 9)
Purity	≥99%
Storage Conditions	Store refrigerated at 2-8°C in the dark.

UV/PL Spectrum



※ The product name, Flamma™ Fluor FR-648, will be changed to Flamma™ Fluor FPR-648 from Sep 23, 2009

#### 2. Product Feature

- Product Solubility: This Product can be dissolved in DMF, H<sub>2</sub>O, phosphate or carbonate buffer, and various biological buffers.
- This product can be used in various buffers that are used in chemical experiments.
- Buffer, such as methanol, ethanol, that contain alcohol should not be used with this product to avoid reduce the validity period of this product

- Conjugation with biomolecules including amino-, thiol-, and hydroxyl- groups, and/or the nano-organic compounds is possible.
- Room temperature storage is possible, but it is recommended to store this product at 2-8°C when dissolved in solvents.
- A long-term storage is possible when dissolved in DMF or DMSO(1mg Flamma / 100  $\mu$ l DMF or DMSO).

### 3. Safety Warnings and Precautions

- Warning: For research only. Not recommended or intended for diagnosis of disease in humans or animals. Do not use internally or externally in humans or animals.
- We recommend that this products and components are handled only by those persons who have been trained in laboratory techniques and that it is used in accordance with the principles of good laboratory practice. As all chemicals should be considered as potentially hazardous, it is advisable when handling chemical reagents to wear suitable protective clothing, such as laboratory overalls, safety glasses and gloves. Care should be taken to avoid contact with skin or eyes. In case of contact with skin or eyes, wash immediately with water.
- Caution: This dye is intensely colored and very reactive. Care should be exercised when handling the dye vial to avoid staining clothing, skin, and other items.

The logo for BioActs features a stylized, abstract shape on the left composed of overlapping circles in shades of yellow, green, and cyan. To the right of this graphic, the word "BioActs" is written in a large, light blue, sans-serif font.

BioActs

A handwritten signature in black ink, appearing to read "Michael Chung", is positioned above a horizontal line.

Michael Chung, QC Manager

August 23, 2009