Optical Building Blocks Corp.
Technical Note: A Great System to Study the Structure and Dynamics of Proteins - EasyLife™ V with 280 nm LED

Proteins

Most proteins fluoresce due to the presence of any or all three fluorescent amino acids: tryptophan, tyrosine and phenylalanine. Intrinsic time-resolved fluorescence of tryptophan is commonly used to study the structure and dynamics of proteins. These experiments require pulsed light sources emitting in the UV, between 270 and 295 nm. The EasyLife V, equipped with the 280 or 295-nm pulsed LED source, is a very robust, turnkey, compact, fast and inexpensive instrument perfectly suitable for use with tryptophan and tyrosine fluorophores.

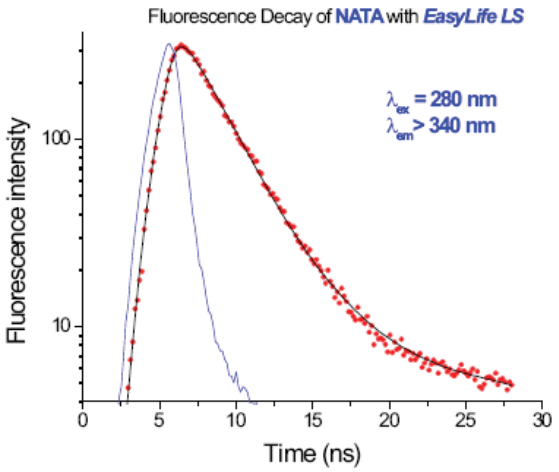

Fig. 1. Fluorescence decay of N-acetyl-L-tryptophanamide (NATA), a tryptophan analog in PBS buffer measured with the EasyLife. The recovered lifetime is 2.88 ns.

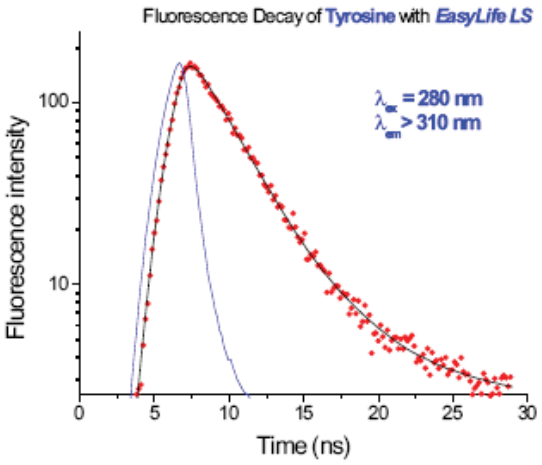

Fig. 2. Fluorescence decay of tyrosine in PBS buffer measured with the EasyLife. The recovered lifetime is 3.03 ns.

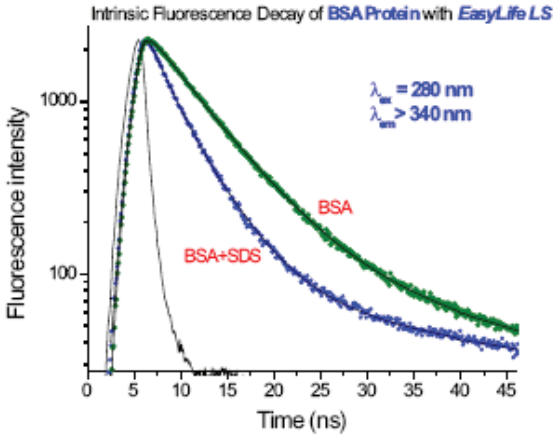

Fig. 3. Fluorescence decays of bovine serum albumin (BSA) in PBS buffer were measured with the EasyLife. The native protein shows a nearly single-exponential decay with an average lifetime of 6.31 ns. After being treated with SDS detergent, BSA undergoes a structural transition and its fluorescence decay exhibits two shorter lifetimes, 1.47 ns (37%) and 4.43 ns (63%).

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