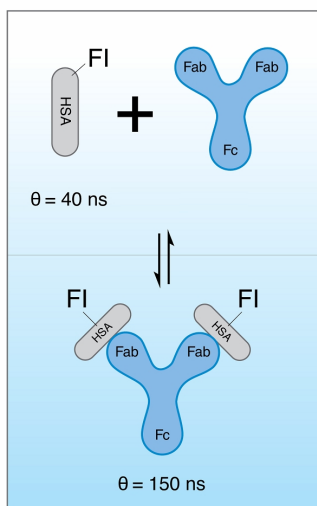
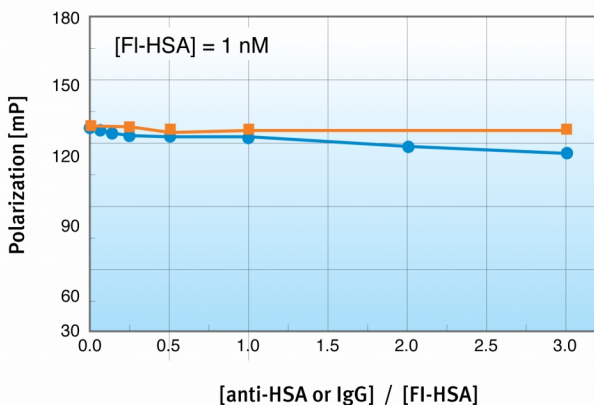
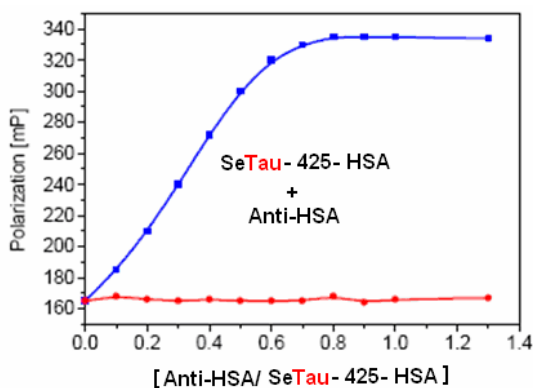


## Long-lifetime Labels for Biomedical Applications

**SeTau** dyes are lifetime dyes that are characterized by long fluorescence lifetime in the order of 8 – 32 ns. For a demonstration of the difference in behavior of a short lifetime probe vs. a longer lifetime probe in a FP assay we use the example of an FPIA of HAS (MW ~ 60 KDa). On one side HSA (the antigen) is labeled with **SeTau**



**425** a long-lifetime label with a lifetime of 26 ns lifetime (right) and on the other side fluorescein, a commonly used 4ns lifetime label. In the case of **SeTau 425** the labeled HSA has still a relatively low starting polarization of 165 mP and only upon addition of the antibody the rotational mobility changes and as a result the polarization increases. A different behavior is shown with fluorescein-labeled antigen: The labeled antigen has a polarization of 130 mP. Typically one would expect a much higher value but the lower polarization is due to the fact that several fluorescein molecules are labeled on one HSA molecule and undergo homo-ET. Due to homo-FRET the polarization value for the conjugate decreases. Nevertheless, the important observation is, that there is no polarization increase observed upon titration with the antibody due to the fact that the lifetime of fluorescein ( $\tau = 4$ ns) is much shorter than the rotational correlation time ( $\theta = 40$  ns) of the antigen.



### Applications

Measurement of high molecular-weight analytes (20 – 80 kDa) in a fluorescence polarization assay (FPIA).

Available long-lifetime Labels from SETA BioMedicals:

| Number                  | Product Name          | Target Group    | Laser Exc [nm] |     | Solvent System <sup>1</sup> | Absorption max. [nm] | Extinction Coefficient [M <sup>-1</sup> cm <sup>-1</sup> ] | Emission max. [nm] | Fluorescence Lifetime [ns] |                  |
|-------------------------|-----------------------|-----------------|----------------|-----|-----------------------------|----------------------|--|--------------------|----------------------------|------------------|
|                         |                       |                 | 380            | 405 |                             |                      |  |                    | Free                       | BSA <sup>2</sup> |
| <a href="#">K1-204</a>  | <i>SeTau</i> -380-NHS | NH <sub>2</sub> | +              | +   | water                       | 381                  | 1,500  | 480                | 32.5                       | 30.6             |
| <a href="#">K4-1082</a> | <i>SeTau</i> -270-NHS | NH <sub>2</sub> |                |     | water                       | 272                  | 10,800   | 385                | 10.2                       | 11.7             |
| <a href="#">K7-545</a>  | <i>SeTau</i> -425-NHS | NH <sub>2</sub> |                | +   | water                       | 425                  | 4,200  | 545                | 26.2                       |                  |
| <a href="#">K7-547</a>  | TG-404-NHS            | NH <sub>2</sub> | +              | +   | water                       | 405                  | 13,800   | 518                | 9.3                        | 7.6              |
| <a href="#">K7-549</a>  | <i>SETau</i> -404-NHS | NH <sub>2</sub> | +              | +   | water                       | 402                  | 10,600   | 515                | 9.3                        | 8.8              |

Advantages of *SeTau* dyes:

- Large Stokes shifts in the order of 100 nm
- Highly water-soluble
- Highly photostable
- Low Quenching when labeled to proteins

For further information or price inquiries please contact us at (217) 417 2160 or send e-mail to [info@setabiomedicals.com](mailto:info@setabiomedicals.com).