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# Instrumentation and Methods for Fluorescence Optical Rotary Dispersion (F-ORD) from Interfacial Biomolecular Assemblies

**Fluorescence optical rotary dispersion (F-ORD) provides chiral- and interface-specific probes for biomolecular assemblies at biological interfaces.**

Researchers at Purdue University developed a fluorescence optical rotary dispersion(F-ORD) method for biological interfaces. Biological interfaces are crucial structural components in living organisms, facilitating essential cellular functions. One example, lipid membranes, provide necessary compartmentalization, which is crucial for various cellular processes. These membranes enable chemical communication through surface-bound receptors. Biosensors frequently rely on surface immobilization of targets to enhance the detection and quantification of biological molecules. However, current analytical tools for selectively analyzing chemical structure-function relationships with biologically relevant interfaces are limited. This highlights a need for the development of more precise and selective technologies to better understand complex interactions occurring at these vital biological interfaces.

The Purdue researchers obtained nonreciprocal responses in their F-ORD system, providing selectivity to chiral molecules oriented at the interface. Chirality is anelectric dipole-allowed orientational mechanism for fluorescence in uniaxial systems. The system elevates fluorescence as a novel chiral-specific probe with high sensitivity to chirality and interface-specificity akin to that normally reserved for even-ordered nonlinear optical interactions. Furthermore, broad experimental access to fluorescence opens the possibility for surface-specific spectroscopy of chiral interfaces that may otherwise be challenging to integrate using coherent nonlinear optical approaches.

**Advantages**:

-Chiral-specific

**Technology ID**

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**Category**

Biotechnology & Life Sciences/Biomarker Discovery & Diagnostics

Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

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**View online**

-Interface-specific

-Selective

**Applications**:

-Biological interface interactions

**TRL:** 3

**Intellectual Property:**

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