

Imaging lipid oxidation using molecular rotors

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Molecular rotors are small synthetic fluorophores, in which the speed of rotation about a sterically hindered bond is viscosity-dependent [1-2]. We have demonstrated that molecular rotors allow imaging of the oxidative stress in lipid membranes, live cells and in atmospheric aerosols, upon exposure to ozone, singlet molecular oxygen, or radicals. We find that in an environment where cross linking or oligomerisation are possible, viscosity increases significantly following oxidative stress, and can be quantitatively imaged using molecular rotors combined with either Fluorescence Lifetime Imaging (FLIM) or ratiometric detection. [3-8]

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