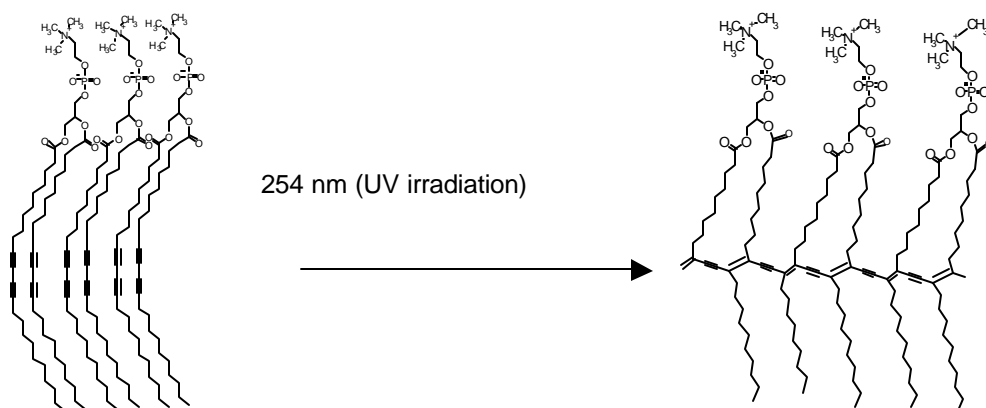


Photo-polymerized Supported Lipid Bilayers

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Supported lipid bilayers provide good models for studying cell membranes. Today, there are important biosensor applications for the use of these model membranes. The major problem with lipid bilayers is that they are unstable when removed from water. One approach for making more stable bilayers is to use a photopolymerizable lipid.



Bilayers composed of the polymerizable lipid DC_{8,9}PC were made using vesicle deposition and characterized using the atomic force microscope (AFM) and nearfield scanning optical microscope (NSOM). The AFM showed that the bilayer was uniform while the NSOM showed that it was heterogeneous. The bilayers were stable in an organic solvent (ethanol) and to dehydration.

The suitability of the polymerized bilayers for protein immobilization was also examined. A modified lipid with a nitriloacetic acid head group that complexes nickel was added to the bilayer. The nickel chelating lipid can be used to immobilize histidine-tagged proteins. A histidine-tagged antibody was shown to adhere to both polymerized and unpolymerized DC_{8,9}PC bilayers containing 13.4 mol% of the chelating lipid. Nonspecific binding of protein on a polymerized DC_{8,9}PC bilayer was also observed.