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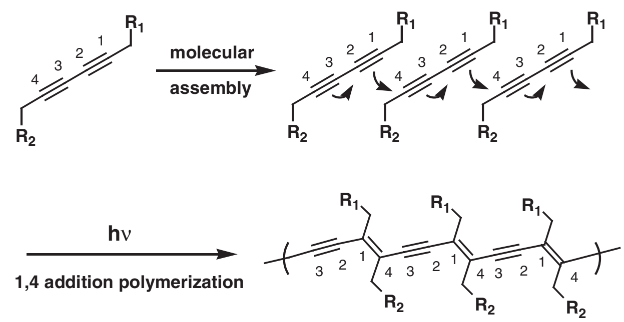
Immobilized Polydiacetylene Vesicles on Solid Substrates for Use as Chemosensors**

By *Jong-Man Kim*,* *Eun-Kyung Ji*, *Sung Min Woo*, *Haiwon Lee*, and *Dong June Ahn**

Recently, the development of efficient sensors utilizing conjugated polymers as sensing matrices has gained much attention among many researchers.[1] Especially, polydiacetylene (PDA)-based sensors for the detection of biologically important species have been intensively investigated due to the unique stimuli-responsive color-changing properties.[2] Certain closely packed and properly designed diacetylene lipids can undergo polymerization via 1,4-addition reaction to form an ene–yne alternating polymer chain upon UV irradiation at 254 nm, as shown in Scheme 1.[3] The resulting PDAs, if obtained under optimized conditions, appear an intense blue color to the naked eye. The advantage of using nanostructured



(R_1 = functionalized alkyl chain, R_2 = alkyl chain)

Scheme 1. Schematic representation of polymerization of assembled functional diacetylenes by irradiation with UV-light.

PDAs as biosensors comes from the fact that such a visible color change, from blue to red, occurs in response to a variety of environmental perturbations, such as temperature,[4] pH,[5] and ligand-receptor interactions.[2]

The vast majority of PDA-based sensors reported to date have been prepared in the form of liposomes[2a] in aqueous solutions or thin films[2c] on solid supports using Langmuir–

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