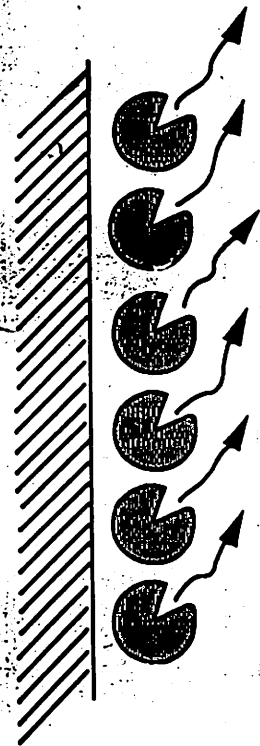


# THE BIOPHOTON PROJECT



## Photoproteins in Ordered Arrays (Bio-Quantum Devices?)

on surfaces, fibers, capillaries  
for directional emission (?)  
wave guiding  
surface reactivity  
polarization (?)  
10 - 100 Å°



## Self-Assembled Scintillors

(Wang)

100 - 10,000 Å°  
photoprotein arrays,  
substrates  
cofactors  
modifiers  
regeneration systems?

## Ordered Organism Arrays -- Artificial Photo Organs

(Min)

1 - 100 ~~μ~~ μ  
bioluminescent bacteria  
dinoflagellates

## Selective Symbiosis

(PSI)

living light sources  
multi-organism systems  
self-contained, stable  
regenerable  
photosynthesis/respiration

Thanks!



# THE BIOPHOTON PROJECT

- **Science, Society, Education**  
Center for Integrated Science Education (CISE)  
Protein Solutions, Inc. (PSI)
- **Bio-Based Engineering**  
Whitaker Award -- Dept. of Bioengineering
- **Proteins at Interfaces**  
Proteins as Engineering Machines & Devices  
Biosensors

$\sum_{i=1}^3 \Rightarrow$  **BIOLUMINESCENCE (Bio-Photons)**

- **Bioluminescence** = Chemiluminescence + Enzymes
- **Biodiversity**  
Bacterial  
Dinoflagellates  
Photoorgans  
Fish & Fireflies
- **Biosensors**
- **Instrument-less Sensors** -- Using the Senses
- **Microcavity Materials Science**

$\Sigma \Rightarrow$  **BIOPHOTON PROJECT**