

W0258

**Time-resolved Crystallographic Studies of Light-induced Structural Changes in the Photosynthetic Reaction Center.** Richard Baxter, Nina Ponomarenko, Vukica Srajer, Reinhard Pahl, Keith Moffat, James Norris, Dept. of Chemistry, Univ. of Chicago, 5735 S. Ellis Ave., Chicago, IL 60637 USA.

Light-induced structural changes in the bacterial reaction center were studied by a time-resolved crystallographic experiment. Crystals of protein from *Blastochloris viridis* (formerly *Rhodospseudomonas viridis*) were reconstituted with ubiquinone and analyzed by monochromatic and Laue diffraction, in the dark and 3 ms after illuminating the crystal with a pulsed laser (630 nm, 3 mJ/pulse, 7 ns duration). Refinement of monochromatic data shows that ubiquinone binds only in the 'proximal' Q<sub>b</sub> binding site. No significant structural difference was observed between the light and dark datasets; in particular, no quinone motion was detected. This result may be reconciled with previous studies by postulating equilibration of the 'distal' and 'proximal' binding sites upon extended dark adaptation, and in which movement of ubiquinone is not the conformational gate for the first electron transfer between Q<sub>a</sub> and Q<sub>b</sub>.