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SECOND SEMI-ANNUAL REPORT

NASA GRANT NAG8-931

BREADBOARD ACTIVITIES FOR ADVANCED PROTEIN CRYSTAL GROWTH

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1. Statement of Work and Deliverables

The proposed work entails the design, assembly, testing and delivery of a turn-key system for the semi-automated determination of protein solubilities as a function of temperature. The system will utilize optical scintillation as a means of detecting and monitoring nucleation and crystallite growth during temperature lowering (or raising, with retrograde solubility systems).

The deliverables of this contract are:

- 1) Turn-key scintillation system for the semi-automatic determination of protein solubilities as a function of temperature,
- 2) Instructions and software package for the operation of the scintillation system,
- 3) One semi-annual and one final report including the test results obtained for ovostatin with the above scintillation system.

1.1 General Status

Though there has been considerable progress made on the topics to be dealt with under this grant, work was reduced to a lower level of activity than anticipated due to time constraints from other projects and the retirement of personnel. Therefore, we have discussed with our grant monitor and requested a no-cost extension of this project.

2.0 Work Performed

2.1 Turn-key Scintillation System

The major mechanical components of the scintillation apparatus have been designed and constructed. We have tested the cooling capabilities of the system with a solution-filled cell and found that the system is able to cool to 1 or 2°C within 15 minutes. At these low temperatures the cell was isothermal to within 1°C. After receipt of the desktop power supply, which is expected shortly, the assembly of the system will be completed. When this last component arrives we will also begin the computer interfacing and testing.

2.2 Reporting

Communication between us and the MSFC protein group has occurred on, at least, a weekly basis and has contributed greatly to the success of this project to date.