

Moffett Field, June 1, 2008

Dear Colleagues,

The Stratospheric Observatory for Infrared Astronomy (SOFIA) project is pleased to invite you to apply to join one of the two science teams (FORCAST or GREAT) for the preparations and analysis of the first-light (“Short Science”) observations on the new observatory, expected to take place in the spring/summer of 2009. Selected community members will join the instrument science teams, under the direction of the instrument PIs, for the duration of the Short Science period. A limited amount of funding will be available for the selected community members. Detailed instructions for applying to this opportunity are given at the end of this letter and can also be found at http://www.sofia.usra.edu/Science/short_science/shortscience.html.

SOFIA will be a leading new observatory for infrared and sub-millimeter astronomy in the next decades. A 2.5-meter telescope designed to make sensitive infrared measurements on a variety of astronomical objects will be carried on a 747-SP aircraft. It will fly at altitudes up to 45,000 feet, above most of the atmospheric water vapor. First light is expected in early 2009 and regular observing is expected to begin in 2010. SOFIA is a joint project between NASA and the German Aerospace Center, DLR. The SOFIA Science Center is located at NASA’s Ames Research Center and the aircraft is based at the SOFIA Operations Center located at NASA’s Dryden Aircraft Operations Center in Palmdale, CA.

SOFIA is currently in the aircraft/telescope verification phase and is expected to go through open-door test flights starting in the fall of 2008. Once these test are successfully concluded, two periods of initial science observations will follow during 2009, making up SOFIA’s “Early Science” phase. Initially, two, approximately 2 week long, periods of nominally 3 limited-duration science flights - “Short Science” - will be performed, one period each with the two Early Science instruments. Following a period of further characterization and capabilities enhancement, a second, two month period of scientific observations – “Basic Science” - will take place. The observations during this latter period will be carried out with both of the Early Science instruments (at a minimum fraction of 20% for each instrument) and will be selected through a call for proposal, scheduled to be released in late 2008.

The two science instruments chosen for Early Science are the “Faint Object InfraRed CAMera for the SOFIA Telescope” (FORCAST; PI: T. Herter, Cornell U.) and the “German Receiver for Astronomy at TeraHertz Frequencies” (GREAT; PI: R. Güsten, MPIfR, Bonn). FORCAST is a two-channel camera with selectable filters for continuum imaging in the 5-25 μm and/or 25-40 μm region, using 256x256 Si:As and Si:Sb blocked-impurity-band detector array technologies to provide high-sensitivity wide-field imaging. Short Science with FORECAST will focus on 30-38 μm imaging. GREAT is a modular dual-channel heterodyne instrument for high-resolution FIR spectroscopy. In its Short Science configuration GREAT will operate two hot electron bolometer detectors in

the frequency range 1.3-1.9 THz. Short Science observations will address, e.g., the physics of warm, dense molecular clouds (via spectroscopy of the high excitation CO and HCN transitions) and the energy balance of the warm ISM via the most important cooling line of ionized Carbon [CII]. Further details of the instruments can be found at http://www.sofia.usra.edu/Science/instruments/sci_instruments.html, and instrument web sites linked from there.

The community members solicited through this “Dear Colleague” letter will, under the leadership of the instrument PIs, and as appropriate, participate in activities such as the detailed planning of the observations, data reduction and analysis.

All qualified astronomers, independent of affiliation, are invited to submit white papers in response to this solicitation. A limited amount of funding is expected to be available to support US based researchers selected as the community members of the Short Science teams. The funding level, pending final approval, is expected to correspond roughly to one month’s salary (fully loaded), in addition to some travel and/or publication support.

To apply to join either of the two Short Science teams, please submit a brief white paper, focusing on the expertise brought to the team by the submitter and how he/she can contribute to the Short Science Team's planned observations and analysis. A template and instructions for the white papers is available in LaTeX or MSWord formats at the SOFIA web site. Please submit the completed white papers by e-mailing them, as .pdf formatted attachments, to short.science.props@sofia.usra.edu, no later than August 15, 2008. After a review by the instrument PIs, the submitted white papers will form the basis of a peer review to select the community Short Science team members. Announcements of the selected community members will be made as soon as possible, but no later than October 15, 2008.

Further information about the SOFIA project can be found at the SOFIA web site (<http://www.sofia.usra.edu>) or by contacting the SOFIA project at sofia_help@sofia.usra.edu.