

Technical Page

Proposal Type: Regular
 General Category: Astronomy
 Sub-Category: Spectroscopy
 Observation Category: Galactic
 Total Time Requested: 8 Hours

Proposal Title: Probing the chemistry of interstellar OH and H₂O using the world's largest and smallest radiotelescopes

ABSTRACT:

The water molecule and hydroxyl radical play a key role in the chemistry of the interstellar medium. In a recent study, we have combined observations of H₂O absorption, carried out with the Submillimeter Wave Astronomy Satellite (SWAS), with OH observations, performed at the Arecibo observatory, to obtain significant constraints upon the chemistry in a diffuse molecular cloud lying along the line-of-sight to W51. This study yielded the first detections of OH and H₂O in the same diffuse molecular cloud, and the first measurement of the column density ratio, N(H₂O)/ N(OH). Here we propose to obtain analogous observations of OH toward a second source in which SWAS observations of foreground H₂O absorption have already been carried out - the star-forming region W49. The requested Arecibo time allocation of 8 hours will significantly enhance the scientific output of a study to which over 800 hours of SWAS spacecraft time has already been devoted.

Name	Institution	E-mail	Phone	Student
David A Neufeld	Johns Hopkins University	neufeld@pha.jhu.edu	410-516-8582	no

Service Observing Request

Remote Observing Request

- | | |
|---|--|
| <input checked="" type="checkbox"/> None
<input type="checkbox"/> All of the observing run.
<input type="checkbox"/> Part of the observing run.
<input type="checkbox"/> Queue Observing | <input type="checkbox"/> No
<input type="checkbox"/> Maybe
<input checked="" type="checkbox"/> Yes |
|---|--|

Instrument Setup

L-wide

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

1610-1614

1663-1669

1718-1722

This proposal requires Iridium RFI protection at 1612 MHz between 10pm and 6am EST.