

## Technical Page

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

**Proposal Title:** A survey of OH toward dark cloud cores observed by SWAS

**ABSTRACT:**

Oxygen is the third most abundant element in the interstellar space, and thus O-chemistry must be understood in order to fully understand chemical processes in space. The Submillimeter Wave Astronomy Satellite (SWAS) has detected spatially extended H<sub>2</sub>O emission from several giant molecular cloud cores, but only upper limits to the water abundance could be established for three dark cloud cores (TMC-1, L134N and B335, Snell et al. 2000). SWAS, however, failed to detect O<sub>2</sub> emission from the observed GMCs as well as the dark cloud cores. A tentative detection was reported by Goldsmith et al. (2002) in the rho-Oph cloud core region (not observable from Arecibo). The OH radical is a crucial intermediary in the Oxygen chemical network (Sternberg and Dalgarno 1995) and thus the OH abundance can provide insight into the chemistry of O-bearing molecules. Here, we propose to observe the  $^2\Pi_{3/2} J = 3/2 F = 1 - 2$  (1612MHz),  $F = 1 - 1$  (1665MHz),  $F = 2 - 2$  (1667MHz) and  $F = 2 - 1$  (1720MHz) OH lines toward the three dark cloud cores observed by SWAS and also two well-studied regions: L1544, a pre-stellar core, and NGC1333, an active site of low-mass star formation where shock chemistry is at work.

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**Service Observing Request**

- None
- All of the observing run.
- Part of the observing run.
- Queue Observing

**Remote Observing Request**

- No
- Maybe
- Yes

**Instrument Setup**

L-wide

**Atmospheric Observation Instruments:**

**Special Equipment or setup:** none

**RFI Considerations**

**Frequency Ranges Planned**

1605 - 1730

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