

**NASA**

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**FIRST INTERNATIONAL SYMPOSIUM ON  
SPACE TERAHERTZ TECHNOLOGY**



**Sponsored by:**

NASA Office of Aeronautics and Space Technology (OAST)  
University Space Engineering Research Centers Program

**Organized Jointly by:**

NASA Center for Space Terahertz Technology, The University of Michigan  
Center for Space Microelectronics Technology, Jet Propulsion Laboratory

**SYMPOSIUM PROCEEDINGS**

March 5-6, 1990  
Lee Iacocca Lecture Hall, Dow Building  
The University of Michigan  
Ann Arbor, Michigan

*Proceedings of the*  
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## Preface

The First International Symposium on Space Terahertz Technology featured papers from academia, government agencies, and industry, summarizing research results relevant to the generation, detection and use of the terahertz spectral region for space astronomy, remote sensing studies of the earth's upper atmosphere and other applications. The presentations covered a wide range of subjects including solid-state oscillators, mixers, harmonic multipliers, antennas, networks, receivers and measurement techniques. Although the discussions focused on the 0.1-1 THz region (3000-300 $\mu$ m), some of the papers examined higher frequencies as well. The program was international in scope, featuring noted researchers from the U.S., Japan, and several European countries.

The Symposium was sponsored by NASA's Office of Aeronautics and Space Technology (OAST) and was organized jointly by The University of Michigan's NASA Center for Space Terahertz Technology and JPL's Center for space Microelectronics Technology. It is our hope that this first symposium will set the stage for future symposia on space terahertz technology to serve as the meeting ground for scientists and engineers interested in this field.

*Fawwaz T. Ulaby*  
*Carl A. Kukkonen*

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