

**DETECTING BIOMARKERS IN THE ICY WORLDS BY MEANS OF TERAHERZ REMOTE SENSING.**

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**Introduction:** Terahertz (THz) radiation, located between traditional microwave and visible light, consists of electromagnetic waves within frequencies from 0.3 to 3 THz (1 THz =  $10^{12}$  Hz). Recently, THz technology has made tremendous progress and many applications have been developed. One of these applications is remote detection of biomolecules in the THz region. Interestingly, many biological compounds exhibit distinct spectroscopic response in THz range [1].

In this paper, I will discuss about the possibilities and challenges of using THz remote sensing to detect possible biomarkers in the icy worlds like Europa, Ganymede, and Enceladus. Remote sensing of biomarkers can be done from orbital and flyby missions. Thz remote sensing is a promising method for biomolecule detection, as it is the only remote method that allows discriminating between common extraterrestrial organic matter from potential biomarkers. However, there are many challenges involved in trying to detect possible extraterrestrial biomarkers with high speed probe far away from Earth.

**References:**

[1] Chen T., Li, Z. and Mo W. (2013) *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 106, 48–53.