

# **A Modified Algorithm for the Determination of Infrared Optical Constants of Ices Relevant to Planetary Surfaces**

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## **Abstract**

Infrared astronomy has revealed a rich variety of chemical species in icy planetary surfaces [1]. The most fundamental parameters to be derived from observed IR spectra are the identity and abundance of each component, but the band strengths and optical constants needed to derive accurate abundances are in general poorly constrained. The results from different authors are also generally in disagreement with each other, possibly due to the fact that the algorithms and computer codes are not published. We have developed a modified approach to the extraction of the real and imaginary parts of the refractive index (i.e. optical constants) of a thin film from a single IR transmission spectrum. Our algorithm has similarities to those described by previous authors (e.g., [2], [3]), with some major changes that yield results for strong absorptions where those previous approaches fail. The algorithm is presented and described, with examples to show agreement with some existing results and improvements upon others. New optical constants calculations for selected ice mixtures are presented, and applications to interstellar and planetary ice data.

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## **References**

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