

ENGINEERING RESEARCH INSTITUTE
UNIVERSITY OF MICHIGAN
ANN ARBOR

EIGHTH QUARTERLY REPORT

ON

INFRARED STUDIES OF CRYSTALS

(PERIOD: 16 May 1953 to 15 August 1953)

BY

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Project M957

SIGNAL CORPS, DEPARTMENT OF THE ARMY
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INFRARED STUDIES OF CRYSTALS

EIGHTH QUARTERLY REPORT

COVERING THE PERIOD

16 MAY 1953 to 15 AUGUST 1953

I. INTRODUCTION

Purpose of the Research

This has been outlined previously and need not be repeated. The objectives are essentially as stated in the Second Annual Report (June 1953).

Personnel

The following have been engaged on the work reported here:

Prof. G.B.B.M. Sutherland, Director (Part time)
Mr. R. T. Mara (Half time)
Mrs. C. Y. Pan Liang (Half time)
Mr. A. Dockrill (Part time as laboratory technician)

II. ACCOUNT OF WORK DONE

(A) Diamond

The work described in Technical Report No. 1 is being prepared for publication.

(B) Brucite

A full account of the work done by R. T. Mara on brucite up to August 15, 1953 has been prepared and will be submitted shortly as Technical Report No. 2. A brief account of this work has been submitted to the Journal of the Optical Society and accepted for publication in the near future.

(C) Mica

The dichroism of the OH stretching frequencies in biotite has been studied systematically and a possible theory proposed to explain the observed results. Further experiments are now in progress to test the theory.

III. FUTURE PROGRAM

(A) Diamond

The whole problem of the two types of diamond will be reviewed afresh in the light of the new data obtained here and also by Grenville Wells in England.

(B) Brucite

The theoretical interpretation of Mara's results will be tackled in detail.

Similar experimental studies are planned for similar hydroxides.

(C) Mica

An attempt will be made to determine the orientation of the OH ions in biotite. A search will be made for oxonium ions in mica.

(D) Concentrated Arc Source

It is hoped that the defects in this source (cf. Second Annual Report) can be removed.

