

ELECTRON MICROSCOPE PHOTOGRAPHIC  
STUDY OF MICA PRODUCTS  
RML Project No. 28

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by  
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Introduction

The need for improved methods of characterizing mica has been recognized by the mica industry for a long time. Various methods of accomplishing this were discussed with Laboratory personnel. One of the methods mentioned involved the use of a scanning electron microscope. This project involves a study of this procedure.

Objective

The purpose of this project was to study photographs of mica products as seen by the scanning electron microscope. The observations were used to evaluate the instrument as a means of characterizing mica.

Samples

Five samples of mica products were taken to North Carolina State University for electron microscope testing. This work was performed by Dr. Hayne Palmour and E. M. Gregory, for which the writer wishes to express his gratitude.

<u>Sample No.</u>	<u>Description</u>
5	Kings Mountain Mica Company mica concentrate ground in laboratory ball mill and used as reference sample 2023-B for mica schist project.

<u>Sample No.</u>	<u>Description</u>	(continued)
6	Laboratory ball milled mica product produced from Haywood County mica schist Lab. No. 3079-70.	
7	Diamond Mica Company's wet ground mica produced from Harris Mining Company mica.	
8	Kings Mountain Mica Company's wet ground mica.	
10	Kings Mountain Mica Company's dry ground mica.	

#### Procedure

Each sample was mounted on a slide for insertion into the microscope. The sample field was scanned and observed on the visual screen. A representative area was chosen and photographs obtained at 300, 3000, and 6000 magnification. These photographs were brought back to the Laboratory for detailed study.

#### Results

The photographs were placed on display and observed by: Division of Mineral Resources geologists, Minerals Research Laboratory Advisory Committee, Wet Ground Mica Association personnel and members of the Minerals Research Laboratory. The photographs were unidentified, not for the purpose of embarrassing anyone but to see how useful they would be to qualified people for characterizing mica. The consensus of this survey was that the various products could not be distinguished as to their identity.

The photographs do serve a useful purpose, as explained by the writer in a paper presented at the Wet Ground Mica Association

meeting.<sup>(1)</sup> The photographs show numerous mica flakes in the two micron range. It is possible that these extremely small bits of mica adhering to the larger production size particles result in a higher bulk density and a reduction in slip or sheen. This was discussed by the group at the end of the presentation.

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(1) Mica Concentration by Rising Current Elutriation and Screening. Presented at the Wet Ground Mica Association meeting, Grove Park Inn, Asheville, N. C., May 11, 1971.