

## **Geology 2 – Physical Geology Lab**

### **Lab #7 – Metamorphic Rock Identification**

#### **Student Outcomes:**

- Be able to identify and name the six common metamorphic rock types examined in lab
- Recognize and understand textures that differentiate foliated and non-foliated rocks
- Understand why metamorphic rocks are classified by both texture and composition.
- Be able to identify and name the common minerals in different types of metamorphic rocks.
- Be able to interpret and describe the tectonic environment of each of the six common metamorphic rocks.
- Understand and be able to use the new terms listed in Part II

#### **Materials:**

- Part I - Six stations of metamorphic rock samples with photographs and figures.
- Part II – List of terminology used in the study of metamorphic rocks
- Part III – 7 mystery metamorphic rock samples
- Hand lens or magnifying glass
- Student textbook with the descriptions of the metamorphic rocks

**Logistics:** The lab is in three parts.

**Part I** – Rotate to various stations at which you will observe various samples of metamorphic rocks. Become familiar with the differences in texture and mineral compositions of the different rocks. Review the accompanying photographs and figures at each station. Answer the questions on the lab worksheet.

**Part II** – Add your notes and definitions to the list of new terminology for your own use.

**Part III** - Determine the name and list an identifying characteristic of each of the seven mystery metamorphic rock samples.

#### **Part I. Classification, Characteristics, and Identification of Metamorphic Rocks**

*What is Metamorphism?* Metamorphism is the changes in mineral composition and texture of a rock subjected to high temperature and pressure within the Earth. Metamorphism means to “change form”. Metamorphic rocks are produced from preexisting rocks – igneous, sedimentary, or metamorphic. The preexisting rock is called the parent rock.

*Classification of metamorphic rocks:* classify metamorphic rocks by texture and composition, as with the other rock types at which we have looked in lab.

*Metamorphic textures:*

- Texture is used to describe the size, shape, and arrangement of grains in a rock
- Two types of metamorphic textures are
  - 1) Foliated
    - In low-grade metamorphism, rocks tend to become more dense and compact
    - Under more extreme pressure, stress causes minerals to recrystallize or grow larger. The recrystallization can cause a realignment of mineral grains that results in a layered or banded appearance termed foliated texture.
    - Foliation describes the parallel alignment of minerals in a rock, or banding
  - 2) Nonfoliated.
    - Found in metamorphic rocks composed of one mineral that form equidimensional crystals; interlocking crystals
    - Does not show foliation or banding

# Lab Manual In Physical Geology Metamorphic Rock

**Michael Seilmaier**



## **Lab Manual In Physical Geology Metamorphic Rock:**

**Laboratory Manual for Physical Geology** Walter Henry Schoewe, 1928      **Laboratory Manual in Physical Geology** American Geological Institute, 2000 For majors and non majors in undergraduate lab courses for Introductory Geology and Physical Geology The best selling lab manual for undergraduate lab courses in Physical Geology or Introductory Geology for majors and non majors With contributions from more than 120 highly regarded geologists and geoscience educators and an exceptional illustration program by Dennis Tasa this user friendly laboratory manual focuses students on the basic principles of geology and their applications to everyday life in terms of natural resources natural hazards and human risks This edition pushes the frontiers of geologic education even further with the inclusion of four new computer based labs      *Laboratory Manual for Physical Geology* Norris W. Jones, 2000-07 If it is important for you to incorporate the scientific method into your teaching this manual aims to help In every exercise there are scientific method boxes that provide students with insight into the relevance of the scientific method to the topic at hand The book also includes in greater depth problems a more challenging probe into certain issues They are more quantitative in nature and require more in depth critical thinking Internet exercises are also integrated throughout the text      **Laboratory Manual for Physical Geology** Malcolm Pickett Weiss, 1963      **Laboratory Manual for Physical Geology** James Herbert Zumberge, Robert Hoxie Rutherford, 1991 This laboratory manual is written for the freshman level laboratory course in physical geology In this lab students study Earth materials geologic interpretation of topographic maps aerial photographs and Earth satellite imagery structural geology and plate tectonics and related phenomena With nearly 30 exercises professors have great flexibility when developing the syllabus for their physical geology lab course The ease of use tremendous selection and tried and true nature of the labs selected have made this lab manual one of the leading selling physical geology lab manuals      *Physical Geology Laboratory Manual* John Becker Lucke, Janet Mora Aitken, 1963      *Laboratory Manual in Physical Geology* Richard M. Busch, American Geological Institute, National Association of Geoscience Teachers, 2006 Revised throughout for enhanced clarity and accuracy and with a greater emphasis on the process of science this user friendly best selling laboratory manual examines the basic principles of geology and their applications to everyday life Students are encouraged to view these principles in terms of natural resources natural hazards and human risks This trusted resource features contributions from highly regarded geologists and geoscience educators with an exceptional illustration program by Dennis Tasa      Laboratory Manual for Physical Geology Sheldon Judson, Margaret Skillman Woyski, 1966      **Physical Geology** R. D. Dallmeyer, 1999-08

**Laboratory Manual for Physical Geology** Edgar J. McCullough, 1965      *Geological Survey Bulletin*, 1973

**Laboratory Manual for Physical Geology** James H. Zumberge, 1995 The new edition of this popular laboratory manual continues to provide introductory lab exercises for students studying physical geology It incorporates exercises involving key areas in physical geology such as earth materials topographic maps aerial photographs structural geology and plate tectonics

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 Ossian, 2003-11-25      **Bibliography of North American Geology**, 1966 1919 28 cumulation includes material previously  
 issued in the 1919 20 1935 36 issues and also material not published separately for 1927 28 1929 39 cumulation includes  
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Applications of Physical Geology Principles: a Laboratory Manual Victor Viosca Cavaroc, P. D. Fullagar, J. J. Gryta, 1977  
**A Laboratory Manual for Physical Geology** Dwight T. Maxwell, 1966      **Bibliography of North American Geology**  
**for 1910 with Subject Index** John Milton Nickles, 1911      **Environmental Chemistry: Advanced Concepts and**  
**Applications** Zhen-Yu Tian, 2025-03-08 This book is a comprehensive guide that explores the intricate relationship between  
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 environmental sciences      Geologic Literature on North America, 1910

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    - Chapter 4: Lab Manual In Physical Geology Metamorphic Rock in Specific Contexts
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- This book is crafted in an easy-to-understand language and is complemented by engaging illustrations. This book is highly recommended for anyone seeking to gain a comprehensive understanding of Lab Manual In Physical Geology Metamorphic Rock.

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