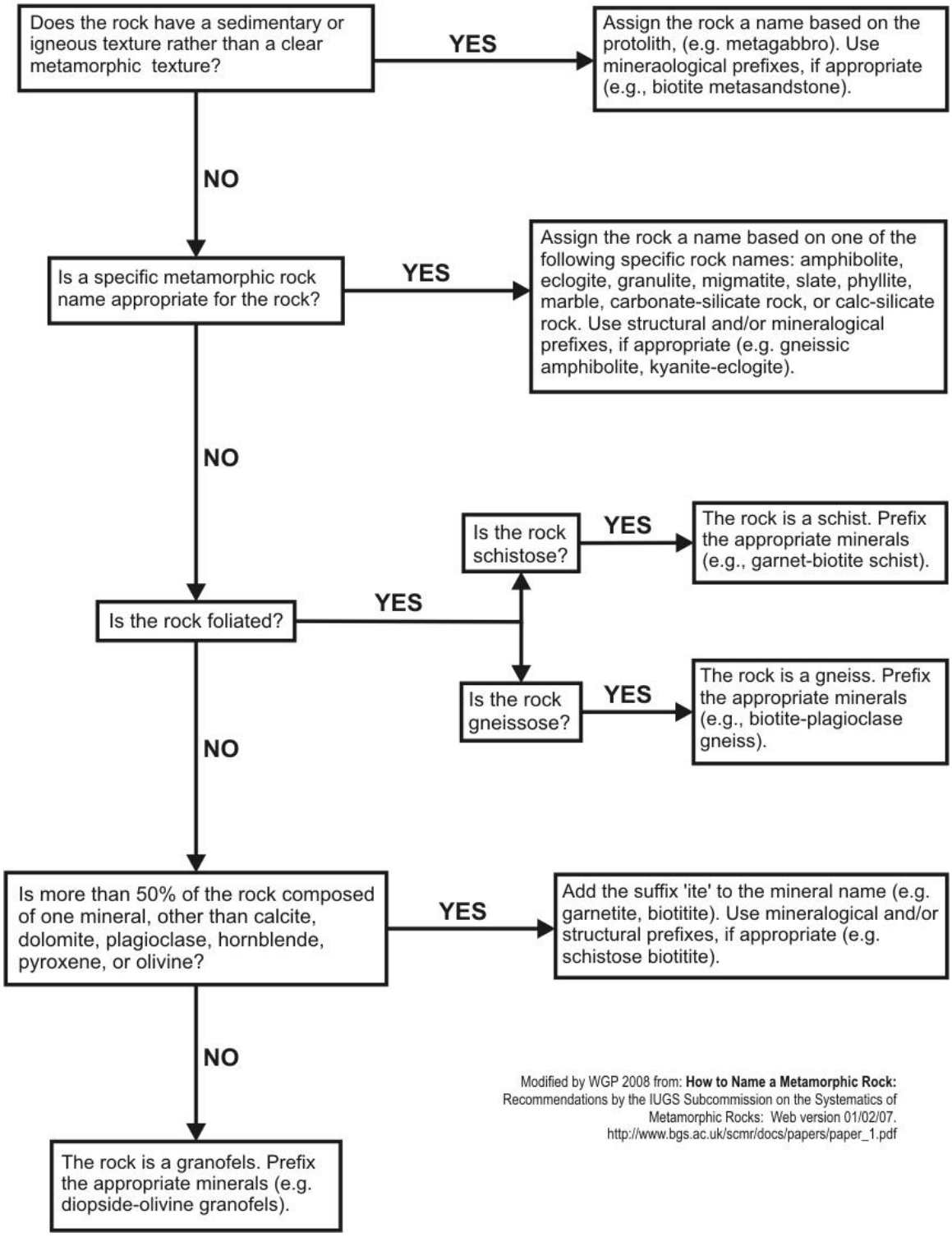
Flowchart for the Naming of Metamorphic Rocks



Modified by WGP 2008 from: **How to Name a Metamorphic Rock:** Recommendations by the IUGS Subcommission on the Systematics of Metamorphic Rocks: Web version 01/02/07. http://www.bgs.ac.uk/scmr/docs/papers/paper_1.pdf

Specific Metamorphic Rock Names Recommended by IUGS

Amphibolite: is a gneissose or granofelsic metamorphic rock mainly consisting of green, brown or black amphibole and plagioclase (including albite), which combined form ≥75% of the rock and both of which are present as major constituents; the amphibole constitutes ≥50% of the total mafic constituents and is present in an amount of ≥30%. Other common minerals include quartz, clinopyroxene, garnet, epidote-group minerals, biotite, titanite and scapolite.

Granulite is a high-grade metamorphic rock in which Fe-Mg-silicates are dominantly anhydrous; the presence of feldspar and the absence of primary muscovite are critical, cordierite may also be present. The rocks with >30% mafic minerals (dominantly pyroxene) may be called **mafic granulites**, those with <30% mafic minerals (dominantly pyroxene) may be called **felsic granulites**. The term should not be applied to ultramafic rocks, calc-silicate rocks, marbles, ironstones or quartzites. Detailed names and subdivisions may be given using mineral-root names, for example, garnet-clinopyroxene-plagioclase granulite.

Eclogite: Plagioclase-free metamorphic rock composed of ≥75% vol. of omphacite and garnet, both of which are present as major constituents, the amount of neither of them being higher than 75%.

Migmatite: A composite silicate metamorphic rock, pervasively heterogeneous on a meso- to megascopic scale. It typically consists of darker and lighter parts. The darker parts usually exhibit features of metamorphic rocks whereas the lighter parts are of igneous-looking appearance. Wherever minerals other than silicates and quartz are substantially involved, it should be explicitly mentioned.

Slate: An ultrafine- or very fine-grained rock displaying slaty cleavage (a type of continuous cleavage in which the individual grains are too small to be seen by the unaided eye).

Phyllite: A fine- to medium-grained rock characterised by a lustrous sheen and a well-developed schistosity resulting from the parallel arrangement of phyllosilicates.

Marble: Metamorphic rock containing more than 50% vol. of carbonate minerals (calcite and/or aragonite and/or dolomite). Pure marble contains more than 95% vol. of carbonate minerals; a marble containing less than 95% of carbonate minerals is classified as impure marble**.**

Carbonate-silicate rock: Metamorphic rock mainly composed of silicate minerals (including calc-silicate minerals) and containing between 5 and 50% vol. of carbonate minerals (calcite and/or aragonite and/or dolomite).

Calc-silicate rock: Metamorphic rock mainly composed of calc-silicate minerals and containing less than 5% vol. of carbonate minerals (calcite and/or aragonite and/or dolomite).

Rules for Prefixing Rock Names

All the *major mineral constituents (5% or more)* that are present in a rock should be prefixed. The prefixes should be hyphenated and placed in order of increasing abundance. For example biotite-quartz-plagioclase gneiss contains more plagioclase than quartz and more quartz than biotite.

If *minor constituents* (<5%) are named, the form 'mineral'-bearing should be used and placed at the beginning of the name (e.g. rutile-bearing biotite-quartz-plagioclase gneiss). If more than one minor constituent is named, the names should be arranged in order of increasing modal abundance, for example, rutile-ilmenite-bearing quartz-plagioclase gneiss, where rutile is less abundant than ilmenite.

Ortho: prefix indicating, when in front of a metamorphic rock name, that the rock derived from an igneous rock (e.g. orthogneiss).

Para : prefix indicating, when in front of a metamorphic rock name, that the rock derived from a sedimentary rock (e.g. paragneiss).

Common Metamorphic Textures

Crenulated: describing a metamorphic rock in which a younger foliation has been superimposed on an older foliation, commonly producing very small scale folds.

Decussate: non-foliated texture in which axes of contiguous crystals lie in diverse, criss-cross directions. It is most noticeable in rocks composed largely of platy or columnar minerals.

Depletion haloes: a zone surrounding a porphyroblast in which the matrix has been depleted in chemical components due to diffusion and incorporation of these components into the porphyroblast

Gneissic: layered rock in which bands or lenses of granular minerals (quartz and feldspar) alternate with bands or lenses in which platy (mica) or elongate (amphibole) minerals predominate.

Granoblastic: a metamorphic texture in which anhedral, equigranular crystals intersect at 120° triple junctions under ideal conditions

Mesh Texture: a net-like pattern of mineral grains that are in optical continuity, but which are separated by replacement minerals

Migmatitic: irregularly banded rock composed of an unmelted metamorphic portion and a melted igneous portion.

Poikiloblastic: occurrence of abundant finer grained inclusions within porphyroblasts

Porphyroblastic: large crystals of metamorphic origin surrounded by smaller crystals

Pseudomorphous: a replacement texture in which the external form of a pre-existing mineral is mimicked by the replacement mineral

Reaction Rims: the partial replacement of minerals along grain boundaries due to reaction between the two minerals along their contact

Schistose: layered rock in which platy mineral grains such as muscovite, biotite, chlorite or talc have a parallel arrangement.

Subgrains: portions of a grain in which the lattices differ by a small angle due to deformation. Common in quartz.

Symplectitic: polymineralic intergrowths of fine-grained elongate crystals that grew simultaneously