rocks. Both mineralogy and chemistry are remarkably uniform in the outcrop rocks and can be subdivided into roughly subequal amounts of chemical components ($60 \pm 10\%$ by mass), including: (1) sulfates, hematite, possibly chlorides and possibly secondary silica, and (2) siliciclastic components ($40 \pm 10\%$), likely dominated by basaltic debris, and its weathering products. The best quantitative constraints on mineralogy are provided in Table 1. Stratigraphic variations exist in the proportions of various minerals and in chemical composition; these are described in detail by Clark et al. [25]. The difficulty in relating mineralogy to textures imposes a

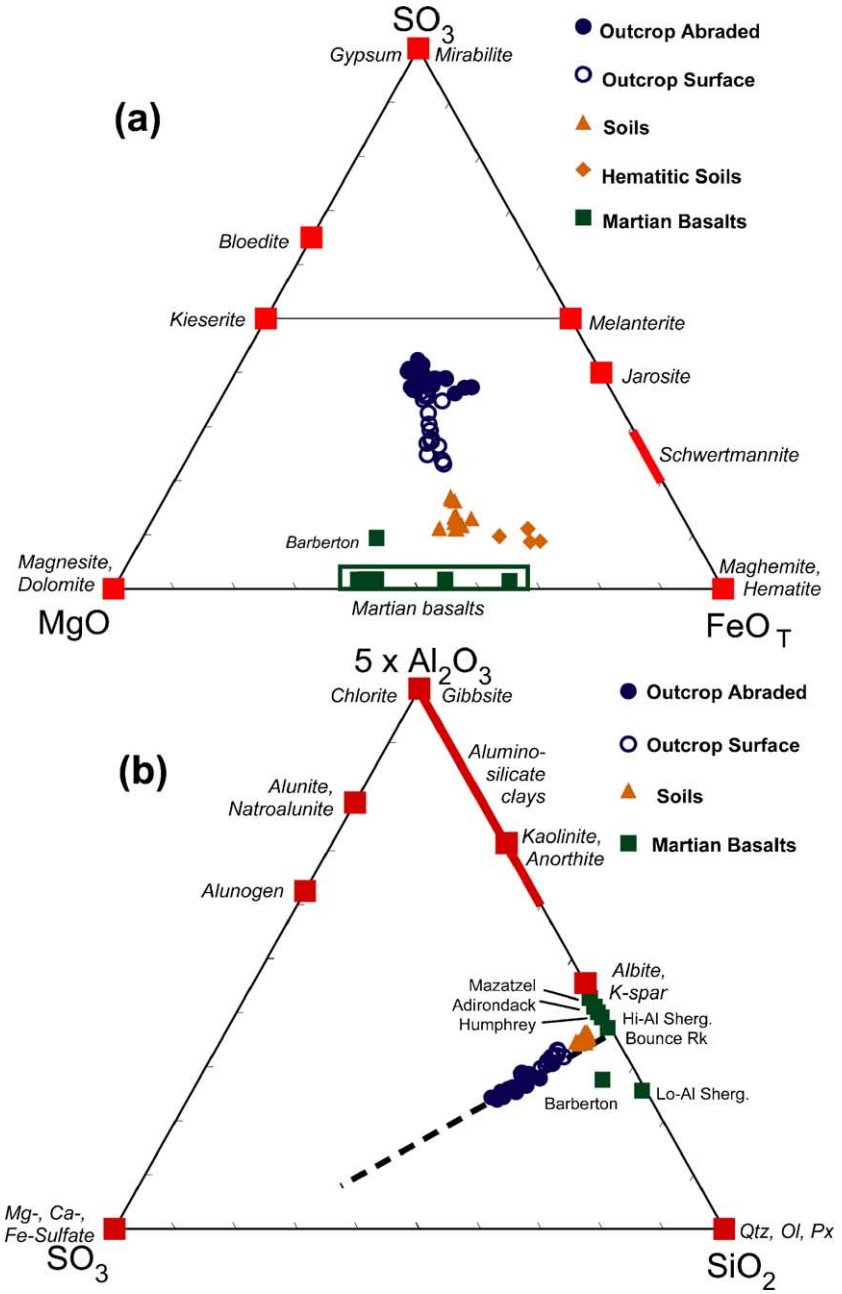

Fig. 2. (a) Plot of mole proportions SO_3 – MgO – FeO_T for abraded and unabraded outcrop and soils. Shown for reference are compositions of various end-member mineral compositions and various martian basaltic rocks (SNC meteorites, Gusev and Meridiani basalts; note that the basaltic cobble Barberton was not RATed and thus has significant amounts of sulfur due to dust and soil contamination). (b) Plot of mole proportions $Al_2O_3(\times 5)$ – SO_3 – SiO_2. Outcrop material forms a linear trend consistent with mixing between a siliciclastic basaltic provenance and a sulfate rich chemical component. Note that the trend intersects the SO_3 – SiO_2 join, consistent with a component of secondary silica.