COMPOSITE MID-PROTEROZOIC ANOROGENIC (?) MAFIC DIKES, PILLOWED IN AND PARTIALLY MISCIBLE WITH GRANITE, WET MOUNTAINS, COLORADO

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Over a dozen composite mafic-granitic dikes crop out along the northern margin of the San Isabel batholith, Wet Mountains, CO. The dikes cross-cut and contain xenoliths of 1441 Ma granitic dikes and are in turn intruded by but probably coeval with late-stage granitic dikes of the 1360 Ma San Isabel batholith. Only two other representatives of the mafic member of the mid-Proterozoic anorogenic suite are known from Colorado (undescribed northern Front Range dikes, Electra Lake Gabbro).

In the field, the dikes contain variable amounts of granitic mater-lacey, mortar-like granite-within-basalt to sub-ovoid pillows of basalt in granite. The pillows often contain small ovoids of the granite. The mutual inclusions and rounded to cuspate liquid-like contacts with minor mixing strongly suggest these dikes formed through commingling of basalt and granite liquids.

The dikes contain bout 40% modal plagioclase (andesine), 25% slightly sodic amphibole, 20% biotite (the mafics include anhedral replacements of pyroxene) abundant sphene and magnetite, minor quartz, epidote, and rare K-spar. Chemically, they show 51-56% $S10_2$, are enriched in incompatible elements and LREE with no Eu depletion. They are tholeiites, compositionally similar to within-plate basalts with rift (i.e., plate separation affinity). Possibly, mantle-derived mafic melts hypothesized to have melted young lower crust to produce the low Sr/Sr (.7030) San Isabel batholith were able to migrate up around the margin of the batholith and can be modeled to have mixed with late-stage granite to form these composite dikes. Also, these dikes with their unusual mineralogy, chemistry and occurrence exemplify development of spessartite lamprophyres.