No SOLOMON, G. C. and ROSSMAN, G.R., Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA 91125 Infrared spectra and petrological inferences suggest that the concen-

tration, speciation and siting of 'water' in feldspars varies with factors related to the availability of water in their environment of crystallization, their composition and subsolidus history. Feldspars affected by oxygen isotopic exchange with hydrothermal fluids (eg. Isle of Skye, Scotland; Skaergaard Intrusion, Greenland; Oman Ophiolite) have absorption characteristic of water in fluid inclusions. Water content $(\sim 0.05 \text{ to } \sim 1.0 \text{ wt.}\%)$ is proportional to the extent that 180/160 has been disrupted from primary "igneous" values. Turbid portions of crystals exhibit the greatest degree of absorption and isotopic exchange. Feldspars not affected by extensive subsolidus interaction with water contain aligned, chemically bound H2O and/or OH. Plagioclase phenocrysts from basaltic lavas (eg. Lake County, Oregon; Crater Elegante, Mexico) contain ~0.01 wt.% water as OH oriented approximately along X. In addition to OH, alkali feldspars from Alpine veins (Grosstal, Switzerland), batholiths and pegmatites (Amelia Courthouse, Virginia; San Jacinto and Pala, California) have two distinct H₂O sites with their molecular planes parallel to (001). Calculations based on microprobe analyses indicate that M-site "charge deficiency" in these feldspars correlates with high water content. In all unaltered feldspars, concentrations (<0.01 to ~0.80 wt.%) of molecular H₂O relative to OH increase from mafic volcanic through silicic batholithic and pegmatitic environments of crystallization. These data suggest that: 1) orthoclase is charge balanced by $\rm H_30^+$, or by hydrated low-Z cations (eg. Li⁺) and 2) molecular $\rm H_20$ is progressively more available as a dissolved species in silicate melts as the total water content of magmas increases.