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List of Abbreviations

The explanations are those supplied by the authors of the papers in this issue.

-a combining form for ampere, as μa (microampere).
A artificial glow curve area
Å angstrom unit; 10^{-8} centimeter
a_o unit-cell *a* parameter
A_r *usu ital:* angle of rotation
AA atomic absorption
AA activation analysis
Ab albite ($NaAlSi_3O_8$)
a-c alternating current
AE aeon; 10^9 years
A.E.I. Associated Electrical Industries
AF alternating field
Ag silver
alk. alkalic
Allende Pueblito de Allende
Al aluminum
amp ampere
amu atomic mass unit
An anorthite ($CaAl_2Si_2O_8$)
An_{100}, anorthite molecule content of 100 percent
Ap apatite [$Ca_5(PO_4)_3(OH,F,Cl)$]
Ar argon
atm atmosphere
Au gold
A.U. astronomical unit
AVCC average carbonaceous chondrite composition
AWRE atomic weapon research establishment

b *usu ital:* mean diffusion lengths
b_o *usu ital b:* unit-cell *b* parameter
Ba barium
Be beryllium
Bi bismuth
Br bromine
b.y. billion years; 10^9 years
c* *usu ital:* reciprocal *c* axis
°C degrees Celsius
c_o *usu ital c:* unit-cell *c* parameter
C2/c *usu ital C, c:* space group
Ca calcium
ca about
cal calorie
cc cubic centimeter
ccSTP/g cubic centimeters at standard temperature and pressure per gram
cm^3 STP/g *ibid.*
cm^3/g(STP) *ibid.*
ccstp/g *ibid*
cstp *ibid.*
Cd cadmium
CEC Consolidated Electrodynamics Corporation
Chr chromite ($FeCr_2O_4$)
CIPW norm system, from initials of the originators, Cross, Iddings, Pirsson, and Washington
C.I.T. California Institute of Technology
Cl chlorine
class 100 room particle (> 5 μm) count less than 100 per cubic foot of air
Cm curium
cm centimeter
cm^3 cubic centimeter
Co cobalt
count/min counts per minute
c_p *usu ital c:* specific heat
cph counts per hour
cpm counts per minute
Cr chromium
Cr cristobalite (SiO_2)
Cs cesium
Cu copper
d day
d *usu ital:* particle diameter
d *usu ital:* density; for example, g/cm^3
D deuterium
$d^4(t_{2g})^3(e_g)^1$ *usu ital d, e, g, t:* Group notation for high spin state Cr^{2+}, indicates an odd number of electrons in the e_g orbitals
d-c direct current
de *usu ital:* energy per unit area and unit time
Di diopside ($CaMgSi_2O_6$)
dph distintegrations per hour
dpm/kg disintegrations per minute per kilogram

E *usu ital:* activation energy
E emission spectrography
EASEP Early Apollo Scientific Experiments Package
emu electromagnetic units
emu/g electromagnetic units per gram
EMX electron microprobe x-ray analysis
En enstatite ($MgSiO_3$)
En_{70} enstatite molecule content of 70 percent
EOB end of bombardment
EPR electron paramagnetic resonance
Eu europium
EVA extravehicular activity

F fluorine
Fa fayalite (Fe_2SiO_4)
Fe iron
f_{H_2O} *usu ital f:* fugacity of water
FID flame ionization detector
f_{O_2} *usu ital f:* fugacity of oxygen

Fo forsterite (Mg_2SiO_4)
Fo_{65} forsterite molecule content of 65 percent
Fs ferrosilite ($FeSiO_3$)
f_{S_2} *usu ital f:* fugacity of sulfur

g gram
g *usu ital:* gyromagnetic ratio
g/cc grams per cubic centimeter [more often g/cm^3]
Ga gallium
GC-MS combined analysis by gas chromatography and mass spectrometry
Gd gadolinium
Ge germanium
Gev 10^9 electron volts; gigaelectron volts
Gi mole percent $MgTiO_3$
G.M.T. Greenwich Mean Time

H *usu ital:* intensity of a magnetic field
H hydrogen
H^+ proton
HCl hydrochloric acid
Hd hedenbergite ($CaFeSi_2O_6$)
He helium
Hed hedenbergite ($CaFeSi_2O_6$)
Hf hafnium
HF hydrofluoric acid
Hg mercury
$Hg_{>450}$ concentration of mercury volatilized above 450°C
Hg_{total} total concentration of mercury
h0l *usu ital h, l:* reciprocal lattice net
HP Hewlett-Packard
hr hour
hz hertz

I iodine
I *usu ital:* intensity
I *usu ital:* specific intensity of magnetization
$I\bar{1}$, $C\bar{1}$ *usu ital I, C:* crystallographic space groups
IAA instrumental activation analysis
i.d. inner diameter
Il ilmenite
Ilm ilmenite ($FeTiO_3$)
in. inch
In indium
INAA instrumental neutron activation analysis
ir infrared
IRM isothermal remanent magnetization
Ir iridium

J *usu ital:* irradiation parameter
J_i *usu ital J:* induced magnetization per unit mass
J_r *usu ital J:* isothermal remanent magnetization per unit mass
J_s *usu ital J:* saturation magnetization per unit mass

k *usu ital:* absorption coefficient
k *usu ital:* Boltzmann's constant
k *usu ital:* thermal conductivity (for example, watt/m=°K)
k *usu ital:* thermal diffusivity
K *usu ital:* bulk modulus
K *usu ital:* thermal conductivity
K potassium
°K degrees Kelvin
kc kilocycle
kb kilobar
kev kiloelectron volt
kg kilogram
Kr krypton

kv kilovolt

L light microscope
La lanthanum
LEF linear-energy spectrophotofluorometry
Li lithium
LM lunar module
ln natural log
LRL Lunar Receiving Laboratory
LSAPT Lunar Sample Analysis Planning Team
LSPET Lunar Sample Preliminary Examination Team
Lu lutetium

m meter
m- milli-, 10^{-3}
M *usu ital:* molar
M sum of metal ions, Fe + Mn + Ca + Mg + Ti
M1, M2 *usu ital M:* lattice position (site)
Mb megabar
mb millibar
mbarn millibarn, 10^{-27} square centimeter
MCD magnetic circular dichroism
m/e *usu ital:* mass to charge ratio
Mev million electron volt
Mg magnesium
mg milligram
mgal milligal
Mhz megahertz
μamp microampere
μl microliter
μm micrometer
min minute
M.I.T. Massachusetts Institute of Technology
ml milliliter
mm millimeter
Mn manganese
modal, mode volume percent, meaured by statistical point count of a thin section
mole molecular
MSA methanesulfonic acid
MSC NASA Manned Spacecraft Center, Houston
MSID mass spectrometric isotope dilution
Mt magnetite [$(Fe^{2+})(Fe^{3+})_2O_4$]
mu mass units
m.y. million years; 10^6 years

N natural glow curve area
N *usu ital:* normal
N; N_2 nitrogen
n neutron
n *usu ital:* index of refraction
n_β *usu ital n:* intermediate index of refraction
n_{546} *usu ital n:* refractive index at 546 nm
n_D *usu ital n:* index of refraction at sodium D line
n_x, n_y, n_z *usu ital n:* index of refraction for the x, y, and z rays, respectively
N, N_D *usu ital N:* refractive index
n- nano-; 10^{-9}
Na sodium
NAA neutron activation analysis
NASA National Aeronautics and Space Administration
NBS National Bureau of Standards
Ne neon
ng nanogram
nicol polarizing prism

nlumen nanolumen
nm nanometer
NMR nuclear magnetic resonance
NRM natural remanent magnetization

O oxygen
O.D. optical density
o.d. outer diameter
oe oersteds (measure of magnetic field strength)
Ol olivine [$(Mg,Fe)_2SiO_4$]
Or orthoclase ($KAlSi_3O_8$)
ORB oceanic ridge basalts
Os osmium

P phosphorus
P *usu ital:* degree of polarization
P *usu ital:* pressure
P_{H_2O} *usu ital P:* water pressure
p- pico-; 10^{-12}
p proton
$P2_1/c$ *usual ital P, c:* space group
Pbnm *usu ital:* space group
Pb lead
$(^{206}Pb/^{204}Pb)_0$ atomic ratio of ^{206}Pb to ^{204}Pb in initial lead
$(^{206}Pb/^{204}Pb)_p$ atomic ratio of ^{206}Pb to ^{204}Pb at present
Pc plagioclase
Pd palladium
PDB Pee Dee belemnite standard; an isotopic standard for carbon
Permount microscopic preparation mounting medium
PET Preliminary Examination Team (Lunar Sample . . . .)
Plag plagioclase
P_{max} *usu ital P:* maximum of polarization curve
Po polonium
ppb parts per billion
ppm parts per million
psi pounds per square inch
Pu plutonium
Px pyroxene
Pyx pyroxene

Q *usu ital:* quality factor
Q quartz (SiO_2)
Qz quartz (SiO_2)

R *usu ital:* reflectivity, in air unless otherwise stated
R regolith
R_1, R_2 *usu ital R:* uniradial reflectivities
R_ω, R_ε *usu ital R:* reflectivities corresponding to the ω and ε directions of a uniaxial crystal
r>v *usu ital:* dispersion of axial angle with $2V$ for the red end of the spectrum larger than that for the violet end
r<v same as above, but $2V$ violet greater than $2V$ red
Rb rubidium
REE rare earth elements
rev/min revolutions per minute
RGAA radiochemical gamma activation analysis
Rh rhodonite ($MnSiO_3$)
R. I. refractive index
r. i. refractive index
RNAA radiochemical neutron activation analysis
rpm revolutions per minute
RT retention time
Ru ruthenium

s *usu ital:* frequency factor
Sc scandium

s soil
S *usu ital:* viscosity coefficient; magnetic moment per gram
S.D. standard deviation
S.E. standard error
sec second
SEM scanning electron microscope
S.E.M. standard error of the mean
Si silicon
Sm samarium
SMOW standard mean ocean water. An isotopic standard for ^{18}O and deuterium
SNOW standard normal ocean water
Sp. g. specific gravity
Sr strontium
sr steradian
SSM spark source mass spectrography
STP standard temperature and pressure
SWC solar wind composition experiment

T *usu ital:* temperature
$\mathbf{T_p}$ *usu ital T:* temperature of glow curve peak
T *usu ital:* age
T *usu ital:* mean life of ^{40}K
$\mathbf{t_{1/2}}$ *usu ital t:* half-life
t *usu ital:* potassium-argon age of sample
$\mathbf{t_s}$ *usu ital t:* potassium-argon age of monitor
TB Tranquillity Base
TDA thermodifferential analysis
Te tellurium
TGA thermogravimetric analysis
Th thorium
THL thermoluminescence
thol. tholeiitic
Ti titanium
Tl thallium
TL thermoluminescence
torr Torricelli (measure of pressure)
Tr troilite
TRM thermoremanent magnetization

U uranium
UF ultrafine
UHV ultrahigh vacuum
USGS United States Geological Survey
U.T. Universal Time
UTC universal time coordinated
uv ultraviolet

V *usu ital:* phase angle
$\mathbf{V_p}$ *usu ital V:* compressional sound velocity
$\mathbf{V_s}$ *usu ital V:* shear sound velocity
2V *usu ital V:* optic axial angle
$\mathbf{2V_z}$ *usu ital V, Z:* Optic axial angle around the slow (*Z*) vibration direction
VRM viscous remanent magnetization

Wo wollastonite ($CaSiO_3$)
wt weight

XRF x-ray fluorescence spectrometry
X,Y,Z *usu cap X, Y, Z:* Vibration directions of the principal refractive indices *a*, β, and γ

y year
Y yttrium
Yb ytterbium

Z *usu ital:* number of formula units in unit cell
Z∧c *usu ital Z, c:* angle between *c* (crystallographic axis) and the principal indicatrix axis
Zn zinc
Zr zirconium

α alpha particle
β angle of monoclinic cell
β volume compressibility
β intermediate refractive index
β^+/m-kg positrons per minute per kilogram
γ reciprocal of thermal inertia
δ isotopic abundance relative to some agreed standard. For example

$$\delta^{13}C = \frac{1000[(^{13}C/^{12}C)\text{sample} - (^{13}C/^{12}C)\text{ std})]}{(^{13}C/^{12}C)\text{std}}$$

ε dielectric constant
θ angle of viewing
λ wavelength
λ radioactive decay constant
λ_ε decay constant for electron capture
λ_β decay constant for beta decay
μ- micro-; 10^{-6}
μ micron
$\rho(\psi)$ directional reflectance
$\rho_b(\psi, \theta)$ bidirectional reflectance
ρ_0 intrinsic density
ρ bulk density
ρ density
σ_m standard deviation of the mean
σ Poisson's ratio
Γ, B "ordering" parameters
χ_r reversible susceptibility per unit mass
ψ angle of illumination
ω frequency of periodic variation of moon surface temperature
$d\Omega$ solid angle

(001),(100) crystal planes, Miller indices
[001], [0112] crystallographic symbols; braces and brackets have special significance.