

# COMPREHENSIVE SUBJECT, AUTHOR, TITLE INDEX<sup>1</sup>

## VOLUME 27, 1979

C. M. DENTAN, J. K. GATTIE, AND F. A. MUMPTON

### A

- Acetamide  
adsorption on Na- and Al-montmorillonite 279  
effect of hydrolysis on adsorption by Na- and Al-montmorillonite 279  
effect of strength of salt solution on adsorption of Na- and Al-montmorillonite 279
- Acetamide and polyacrylamide adsorption onto clays: Influence of exchangeable cations and the salinity of the medium**, by P. Espinasse and B. Siffert 279
- Acid-base titration  
of biotite, Al-release during 113  
of illite, Al-release during 113  
of kaolinite, Al-release during 113  
of muscovite, Al-release during 113
- Acidity  
of edge sites of K-saturated kaolinite by potentiometric titration in non-aqueous solvents 57  
titratable, of K-saturated kaolinite 57
- Activation energy  
apparent, dehydroxylation of Ni-montmorillonite, Ni-nontronite, and intercalated analogues 373  
water diffusion in Na-montmorillonite:pyridine/H<sub>2</sub>O intercalate 140
- ADAMS, J. M. (with C. BREEN and C. RIEKEL), The diffusion of interlamellar water in the 23.3 Å Na-montmorillonite:pyridine/H<sub>2</sub>O intercalate by quasielastic neutron scattering 140
- ADAMS, J. M. (with S. EVANS), Determination of the cation-exchange capacity (layer charge) of small quantities of clay minerals by nephelometry 137
- ADAMS, J. M. (with S. EVANS), Exchange and selective surface uptake of cations by layered silicates using X-ray photoelectron spectroscopy (XPS) 248
- Adsorption  
acetamide on Na- and Al-montmorillonite 279  
complexes of glyphosate (Roundup) with montmorillonite, IR 19, 29  
isotherms, of water vapor on montmorillonite 145  
of alcohol, intercalate formation on RNH<sub>3</sub>-montmorillonite 377  
of glycine by montmorillonite from alcohol solution 19  
of glyphosate (Roundup) by montmorillonite 19, 29  
of hydroxy-carboxylic acids on ferrihydrite, influence on crystallization of hematite, goethite 402  
of intercalate formation in montmorillonite with glyphosate (Roundup) 29  
of methylene blue on clays and synthetic gels 87  
of n-aliphatic alcohols on alkylammonium-montmorillonite, isotherms 377  
of Ni on kaolinite, effect of ionic strength, ion-pair formation 411  
of organic spin-probe cation on hectorite 97  
of TEMPAMINE<sup>+</sup> on hectorite 97  
of VO<sup>2+</sup> on hectorite 91  
of water on heulandite, stilbite, isotherms 423  
of water on heulandite, stilbite, structural relations 423  
of water on heulandite, stilbite, thermodynamic relations 423  
of yeast RNA, effect of salt solutions 261  
of zirconyl chloride on Na-montmorillonite 119  
on Cu-hectorite 224  
organophilic-hydrophilic concept, limitations of 285  
parathion on attapulgite and montmorillonite 285  
polyacrylamide on Na- and Al-montmorillonite 279  
potential theory 423  
reduced concentration concept, limitations of 285  
yeast RNA on allophane, effect of salt solutions 261
- Adsorption of n-aliphatic alcohols from dilute aqueous solution on RNH<sub>3</sub>-montmorillonites, The. II. Interlamellar association of the adsorbate, The**, by M. S. Stul, J. B. Uytterhoeven, J. De Bock, and P. L. Huyskens 377
- Adsorption of yeast RNA by allophane, The**, by D. H. Taylor and A. T. Wilson 261
- ALBERS, DOYLE (with ERIC ESLINGER, PATRICK HIGHSMITH, and BENJAMIN DEMAYO), Role of iron reduction in the conversion of smectite to illite in bentonites in the Disturbed Belt, Montana 327

<sup>1</sup> All items are indexed to the first page of the journal article in which they appear.

## Alcohol

- adsorbed, interlamellar association of, in  $\text{RNH}_3$ -montmorillonite 377
- n-aliphatic, adsorption on alkylammonium montmorillonite 377

ALEXANDER, ELAINE (with J. R. HEIN and H-W. YEH), Origin of iron-rich montmorillonite from the manganese nodule belt of the North Equatorial Pacific 185

## Alkylammonium

- exchanged mixed-layer 2:1 clays, basal spacings 1
- exchanged mixed-layer 2:1 clays, layer charge 1
- ion-exchange method 1
- montmorillonite, adsorption of n-aliphatic alcohols on 377
- montmorillonite, intercalate phase with alcohol adsorption 377
- montmorillonite, interlamellar association of adsorbed alcohols 377
- montmorillonite, preparation 377
- montmorillonite, XRD of alcohol-adsorbed 377

## Allophane

- adsorption of yeast RNA 261
- adsorption of yeast RNA, effect of salt solutions 261
- book review, *Chronobibliographie, Signalétique et Analytique, des Sols à Allophane (Complément 1976; Errata et compléments 1950-1975)* by J. Gautheyrou, M. Gautheyrou, and F. Colmet Daage 80
- surface charge as a function of pH 261
- with imogolite from weathered plagioclase 209

## Alteration

- mechanisms, biotite in weathered granite, Australia 349
- products, oriented growth of, from biotite 361

## Aluminosilicate gel

- Ca-fixation on 87
- cation-exchange behavior 87
- synthesis 87

## Aluminum

- effect of, on goethite formation 105
- goethite, selective dithionite dissolution 368
- goethite, Venezuelan laterite 368
- goethite, XRD, IR 368
- hydroxy polymers formed by Al-release during acid-base titration 113
- in ferrihydrite, determined by AA 195
- influence of [Al] on goethite, hematite formation from ferrihydrite 195
- influence of, in hematite formation 105
- oxide parathion degradation on 72
- oxygen distance in boehmite 81
- release from aluminosilicate minerals during acid-base titrations 113

- source for authigenic montmorillonite, Pacific deep-sea sediments 185
- substituted ferrihydrite, DTA 105
- substituted ferrihydrite, synthesis 105
- substitution in hematite, effect on cell dimensions 105
- substitution in hematite, effect on crystal growth 105

**Aluminum-bearing goethite in Venezuelan laterites**, by E. Mendelovici, S. Yariv, and R. Villalba 368

## Amesite

- atomic parameters 241
- bond lengths 241
- cation-ordering pattern 241
- charge-balance pattern 241
- crystal structure refinement 241
- hydrogen-hydroxyl bonding 241
- interlayer bonding 241
- unit-cell dimensions, refined 241

## Amine

- adsorption products on montmorillonite 29
- dien and tetren complexes with Cu and Ni on hectorite 269

## Aminocaproic acid

- complexes with homoionic montmorillonite 129
- intercalation with montmorillonite 129

## Amorphous material (see also Imogolite)

- allophane adsorption of yeast RNA 261
- cation exchange 87
- dissolution by tiron solution 297
- imogolite in nonvolcanic Canadian soils 297
- in Pennsylvania soil clays 87
- site of imogolite formation on plagioclase 209
- synthesis 87
- weathered surface product of plagioclase 209

## Annite

- hydroxyl orientation 213

## Announcement

- Clay Minerals Conference, 27th 160, 310
- International Conference on Asbestos, 4th 311
- International Conference on Zeolites, 5th 311

## Argentina

- clay deposits, Las Aguilas Formation 433
- refractory clay, ceramic clay reserves, Las Aguilas Formation, Buenos Aires Province 433

## Asbestos (see also Chrysotile, Serpentine)

- 4th International Conference, announcement 311

## Atomic absorption spectroscopy (AA)

- determination of Fe and Al in ferrihydrite 105, 195
- determination of Fe-rich smectite composition 185

## Atomic parameters

- amesite, Antarctica 241

## Attapulgitite (see also Palygorskite)

- adsorption of parathion on 285

- methylammonium-exchanged, adsorption of parathion on 285
- Australia  
biotite alteration in weathered granite 349, 361
- B**
- BAERTS, RITA (with R. A. SCHOONHEYDT, FIRMIN VELGHE, and J. B. UYTTERHOEVEN), Complexes of diethylenetriamine (dien) and tetraethylenepentamine (tetren) with Cu(II) and Ni(II) on hectorite 269
- BAILEY, S. W. (with G. W. BRINDLEY, H. KODAMA, and R. T. MARTIN), Report of The Clay Minerals Society Nomenclature Committee for 1977 and 1978 238
- BAILEY, S. W. (with S. H. HALL), Cation ordering pattern in amesite 241
- Bailey, S. W. distinguished member award 79, 157
- Barium  
nephelometric determination 137
- BART, J. C. (with F. CARIATI, L. ERRE, C. GESSA, G. MICERA, and P. PIU), Formation of polymeric species in the interlayer of bentonite 429
- Basal spacing  
bentonite, Sardinia, diazomethane adsorbed 423  
Ca-, K-exchanged montmorillonite 393  
of alkylammonium exchanged, mixed-layer 2:1 clays 1  
of dien and tetren complexes of Cu and Ni on hectorite 269  
of glyphosate (Roundup)-sorbed homoionic montmorillonite 29  
of hectorite-phenanthroline intercalates 201  
of homoionic montmorillonite-nylon polymer complexes 129  
of montmorillonite, relation to dehydration-dehydroxylation 119  
of montmorillonite-phenanthroline intercalates 201  
of Na-montmorillonite:pyridine/H<sub>2</sub>O intercalate 140  
of Na/Ca montmorillonite at different relative humidities 145  
of TEMPAMINE<sup>+</sup>-exchanged hectorite 97  
of vermiculite-phenanthroline intercalates 201  
of zirconyl-exchanged montmorillonite 119  
of zirconyl-exchanged, reduced-charge montmorillonite 119  
RNH<sub>3</sub>-montmorillonite, alcohol adsorbed 377
- Behavior of kaolinite pellets at elevated temperatures, by W. H. Flank 11
- Beidellite  
CEC of, by nephelometry 137
- Bentonite (see also Montmorillonite, Smectite)  
adsorption of diazomethane 429  
chemical analyses, Disturbed Belt, Sweetwater Arch, Montana 327  
diazomethane-adsorbed, polymerization of interlayer polymethene 429  
increase of Fe<sup>2+</sup> in illite/smectite mixed layers in Disturbed Belt, Montana 327  
interlayer polymethelene in, hydrophobic properties 429  
Mössbauer spectra of illite/smectite mixed-layer in 327  
Sardinia, IR, XRD, ESR analyses 429
- Benzidine  
adsorption of Cu-hectorite 224  
-hectorite complexes, ESR 224  
-hectorite complexes, UV-visible spectra 224  
reaction with adsorbed, structural iron of hectorite 224
- BET theory  
analysis of water-vapor isotherms of Na/Ca montmorillonite 145
- Biogenic debris  
source of Al for authigenic montmorillonite, Pacific deep-sea sediments 185
- Biotite  
abundance, variation with depth in weathered granite 349  
acid-base titration curves 113  
alteration in weathered granite 349, 361  
composition, variation with depth in weathered granite 349  
hydroxyl orientation 213  
microprobe analysis, from weathered granite, Australia 349  
oriented growth of alteration products 361  
release of Al, in acid-base titration 113  
SEM, from weathered granite, Australia 349  
single crystal X-ray diffraction 361  
TEM, XRD, from weathered granite, Australia 349, 361
- Biotite alteration in deeply weathered granite: I. Morphological, mineralogical, and chemical properties**, by R. J. Gilkes and Anchalee Suddhiprakarn 349
- Biotite alteration in deeply weathered granite: II. The oriented growth of secondary minerals**, by R. J. Gilkes and Anchalee Suddhiprakarn 361
- Bitumen  
association with clay sludge from oil sands 301  
extractable, from Athabasca oil sands 301
- Black shale (see Shale)
- Black shale—its deposition and diagenesis**, by H. A. Tourtelot 313
- Boehmite  
Al-O distances 81  
atomic coordinates 81  
crystal structure refinement 81  
synthesis 81

- unit-cell refinement 81  
XRD 81
- Bond lengths  
amesite, Antarctica 241
- Bonding energy  
charges as an indicator of crystallization of silica in heated kaolinite 11  
charges in kaolinite, variation with temperature 11  
estimated by XRF shifts in kaolinite 11
- Book review  
*Ceramic Processing Before Firing*, edited by G. Y. Onoda, Jr. and L. L. Hench 240  
*Chronobibliographie, Signalétique et Analytique, des Sols à Allophane (Complément 1976; Errata et compléments 1950-1975)* by J. Gautheyrou, M. Gautheyrou, and F. Colmet Daage 80  
*Clays and Clay Minerals of Japan*, edited by Toshio Sudo and Susumu Shimoda 240  
*Natural Zeolites: Occurrence, Properties, Use*, edited by L. B. Sand and F. A. Mumpton 309  
*The Chemistry of Soil Constituents*, edited by D. J. Greenland and M. H. B. Hayes 309
- Bradley, William F. distinguished member award 79
- BREEN, C. (with J. M. ADAMS and C. RIEKEL), The diffusion of interlamellar water in the 23.3 Å Na-montmorillonite:pyridine/H<sub>2</sub>O intercalate by quasi-elastic neutron scattering 140
- BRINDLEY, G. W., book review, *Chronobibliographie, signalétique et Analytique, des Sols à Allophane (Complément 1976; Errata et compléments 1950-1975)*, by J. Gautheyrou, M. Gautheyrou, and F. Colmet Daage 80
- BRINDLEY, G. W., book review, *Clays and Clay Minerals of Japan*, edited by Toshio Sudo and Susumu Shimoda 240
- BRINDLEY, G. W., distinguished member citation, José J. Fripiat 158
- BRINDLEY, G. W. (with S. W. BAILEY, H. KODAMA, and R. T. MARTIN), Report of The Clay Minerals Society Nomenclature Committee for 1977 and 1978 238
- BRINDLEY, G. W. (with S. YAMANAKA), High surface area solids obtained by reaction of montmorillonite with zirconyl chloride 119
- Brindley, George W. distinguished member award 79
- Brittle mica  
hydroxyl orientation 213
- Bubble-wall shards altered to montmorillonite**, by H. N. Khoury and D. D. Eberl 291
- Buffering  
of Al during acid-base titration of aluminosilicates 113
- C
- CABRERA, F. (with O. TALIBUDEEN), The release of aluminum from aluminosilicate minerals. II. Acid-base potentiometric titrations 113
- Ca-K exchange reaction and interstratification in montmorillonite**, by Atsuyuki Inoue and Hideo Minato 393
- Calcite  
in cleat fillings of coal, formation 154
- Calcium  
nephelometric determination 137
- Carbon  
isotopes C<sup>13</sup>/C<sup>12</sup> ratios of calcite in coal 154
- CARIATI, F. (with J. C. BART, L. ERRE, C. GESSA, G. MICERA, and P. PIU), Formation of polymeric species in the interlayer of bentonite 429
- CARNEY, L. L. (with NECIP GÜVEN), The hydrothermal transformation of sepiolite to stevensite and the effect of added chlorides and hydroxides 253
- Catalysis  
degradation of parathion by adsorption on montmorillonite 76
- Cation density  
differences in interlayer caused by polar layers 1  
in interlayer space in mixed-layer 2:1 clays 1  
method of deducing layer charge 1  
of smectitic interlayers, by alkylammonium ion exchange 1
- Cation exchange  
alkylammonium exchanged mixed-layer 2:1 clay 1  
Ca-K montmorillonite equivalent to random interstratified phase 393  
composition of Canadian soils 297  
effect of hydrated montmorillonite on basal spacings 39  
effect of tactoid formation on selectivity of montmorillonite 303  
equations, statistical mechanics derivation 417  
equilibria for Ca-K montmorillonite, entropy 393  
equilibria for Ca-K montmorillonite, standard enthalpy 393  
equilibria for Ca-K montmorillonite, standard free energy of 393  
isotherms of Na-exchanged erionite 231  
Na-Ca isotherms on montmorillonite 303  
of amorphous aluminosilicate gels 87  
of Camp Berteau montmorillonite, ideal behavior 125  
of trace metals on Camp Berteau montmorillonite 125  
properties of erionite, Jersey Valley, Nevada 231

- “Roundup” adsorption on montmorillonite 29  
 selectivity, montmorillonite, theory 417  
 theoretical treatment 125
- Cation-exchange behavior of clays and synthetic aluminosilica gels**, by C. H. Chu and L. J. Johnson 87
- Cation-exchange capacity (CEC)  
 Birch Pit, Georgia, kaolinite for Ca 411  
 of iso-propylammonium adsorbed by homoionic montmorillonites 29  
 of reduced-charge montmorillonite 387  
 of Upton, Wyoming, montmorillonite for K, Na 417  
 relationship with layer charge in montmorillonite 387  
 smectite and vermiculite for sulfate salts and phenanthroline complexes 201
- Cation ordering  
 amesite from Antarctica 241  
 effects of, on hydroxyl orientation in trioctahedral mica structure 213  
 related to charge-balance pattern 241
- Cation ordering pattern in amesite**, by S. H. Hall and S. W. Bailey 241
- Cationic spin probe  
 orientation on clays in methanol and water systems 97  
 TEMPAMINE<sup>+</sup> on hectorite, electron spin resonance of 97
- Cationic spin probes on hectorite surfaces: Demixing and mobility as a function of adsorption level**, by M. B. McBride 97
- CEBULA, D. J. (with R. K. THOMAS, S. MIDDLETON, R. H. OTTEWILL, and J. W. WHITE), Neutron diffraction from clay-water systems 39
- Celadonite  
 nomenclature 238
- Cell dimensions  
 of hematite, effect of Al-substitution 105  
 of synthetic boehmite, refinement 81
- Ceramic  
 clays, Las Aguilas Formation, Buenos Aires Province, Argentina 433  
 book review, *Ceramic Processing Before Firing*, edited by G. Y. Onoda, Jr. and L. L. Hench 240
- Chamosite  
 nomenclature 238
- Charge density  
 by alkylammonium ion exchange 1  
 of mixed-layer 2:1 clays 1
- Charge distribution  
 heterogenous, of natural smectitic clay minerals 1  
 of ideal mixed-layer minerals 1  
 of smectites and vermiculites, by alkylammonium ion exchange 1
- Chattanooga shale  
 ore deposits in 313
- Chemical analysis  
 bentonites, mixed-layer illite/smectite, Disturbed Belt, Sweetwater Arch, Montana 327  
 clays, Las Aguilas Formation, Argentina 433  
 discussion of mathematical treatment of XRF data 305  
 DOMES smectite, Mn-nodule belt, North Equatorial Pacific 185  
 erionite, Na-exchanged, Jersey Valley, Nevada 231  
 glauconites, New Zealand by XRF 339  
 hydroxy-zirconium montmorillonite 119  
 Na-exchanged montmorillonite, Wyoming, Volclay 119  
 reply to discussion of mathematical treatment of XRF data 305  
 sepiolite, Aschenbrenner deposit, Nevada 253
- Chlorite  
 abundance, Biscaye technique vs. internal standard technique 175  
 abundance, deep-sea sediments, Mn-nodule belt, North Equatorial Pacific 185  
 in kaolinite deposits, Las Aguilas Formation, Argentina 433  
 quantitative analysis in deep-sea sediments 175  
 trioctahedral, nomenclature 238
- CHRISTOPH, G. G. (with C. E. CORBATÓ, D. A. HOFMANN, and R. T. TETTENHORST), The crystal structure of boehmite 81
- Chrysotile  
 breakdown to forsterite, enstatite, Si-rich phases 161  
 high resolution TEM and SAD of thermal products 161  
 topotactic transformation to forsterite 161
- CHU, C. H. (with L. J. JOHNSON), Cation-exchange behavior of clays and synthetic aluminosilica gels 87
- Citric acid (see Hydroxy-carboxylic acid)
- Clay deposits of Las Aguilas Formation, Barker, Buenos Aires Province, Argentina**, by P. E. Zalba 433
- Clay distribution  
 Fe-montmorillonite, Mn-nodule belt, North Equatorial Pacific 185  
 in Pacific deep-sea sediments 175  
 montmorillonite, illite, chlorite, kaolinite, in Pacific deep-sea sediments 185  
 quantitative estimates by XRD, deep-sea sediments 175
- Clay Minerals Society, The, announcement, 16th annual meeting 310
- Clay quantification  
 by XRD and linear programming, with talc internal standard 175

## Cleat-fillings

calcite and kaolinite, in coal 154

## Clinochlore

nomenclature 238

## Clinoptilolite

contaminant in erionite, Jersey Valley, Nevada  
231

## Coal

calcite and kaolinite cleat fillings 154

Illinois Coal Basin 154

**Complex acids and their role in the stability of clay sludges from oil sands**, by M. A. Kessick 301**Complexes of diethylenetriamine(dien) and tetraethylenepentamine(tetren) with Cu(II) and Ni(II) on hectorite**, by R. A. Schoonheydt, Firmin Velghe, Rita Baerts, and J. B. Uytterhoeven 269

## Cookeite

nomenclature 238

## CORBATÓ, C. E. (with G. G. CHRISTOPH, D. A. HOFMANN, and R. T. TETTENHORST), The crystal structure of boehmite 81

## CORNELL, R. M. (with U. SCHWERTMANN), Influence of organic anions on the crystallization of ferrihydrite 402

## CREMERS, ADRIEN (with ANDRÉ MAES and M. S. STUL), Layer charge-cation-exchange capacity relationships in montmorillonite 387

## Cristobalite

transformation product of kaolinite 11

## Crystal

growth of Al-substituted hematite 105

## Crystal structure

effect of, on cation-exchange properties of erionite 213

hydroxyl orientations in 2:1 phyllosilicates 213

of amesite, refinement 241

of boehmite, refinement 81

topotactic relation of chrysotile and thermal products 161

**Crystal structure of boehmite, The**, by G. G. Christoph, C. E. Corbató, D. A. Hofmann, and R. T. Tettenhorst 81

## Crystallinity

New Zealand glauconites 339

of hematite, effect of KOH ageing 105

of hematite, influence of Al-substitution on 105

## Crystallization

of ferrihydrite to hematite, goethite, dependence on pH and hydroxyl-carboxylic acid concentration 402

of ferrihydrite to hematite, goethite, influence of organic anions on 402

of goethite from ferrihydrite 402

of hematite from ferrihydrite 402

of mullite and silica from kaolinite with heating  
11

## D

DE BOCK, J. (with M. S. STUL, J. B. UYTTERHOEVEN, and P. L. HUYSKENS), The adsorption of n-alkyl alcohols from dilute aqueous solutions on RNH<sub>3</sub>-montmorillonites. II. Interlamellar associations of the adsorbate 377

## Deep-sea clays

distribution of Fe-montmorillonite, North Equatorial Pacific 185

Fe-montmorillonite, Mn-nodule belt, North Equatorial Pacific 185

in North Pacific sediments, distribution 175

quantitative analysis by XRD 175

source of Al, Fe, Si for formation, North Equatorial Pacific 185

## Deep-sea sediments (see also Deep-sea clays)

distribution of montmorillonite, illite, chlorite, kaolinite, in 185

Fe-montmorillonite Mn-nodule belt, North Equatorial Pacific 185

North Pacific, clay distribution 175

quantitative clay analysis of 175

## Degradation

of parathion, on silica gel and aluminum oxide  
72

## Dehydration

dimensional changes of kaolinite pellets with 11  
rate, kinetically controlled in kaolinite 11

## Dehydroxylation

of kaolinite, relation to bonding energy charges  
11

of kaolinite, relation to two-step shrinkage 11

of thermally treated chrysotile, by TEM/SAD  
data 161

of zirconyl-exchanged montmorillonite 119

of zirconyl-exchanged reduced-charge montmorillonite 119

rate of smectite, influence of heat-stable intercalates 373

## DEMAYO, BENJAMIN (with ERIC ESLINGER, PATRICK HIGHSMITH, and DOYLE ALBERS), Role of iron reduction in the conversion of smectite to illite in bentonites in the Disturbed Belt, Montana 327

## DEMIREL, T. (with E. R. TUNCER and R. A. LOHNES), Quantitative analysis of elements in sediments and soils by X-ray fluorescence: A reply 306

## Demixing

Ca-, K-exchanged montmorillonite to form illite  
393

## Deposition

environments of black shales 313

modes for black shales 313

## DE SOUZA SANTOS, HELENA (with KEIJI YADA), Thermal transformation of chrysotile studied by high resolution electron microscopy 161

- Determination of the cation-exchange capacity (layer charge) of small quantities of clay minerals by nephelometry**, by J. M. Adams and S. Evans 137
- Diagenesis  
 in formation of black shale 313  
 of glauconite, reduction sequence 339  
 oxidation-reduction reactions in 313  
 sequence, related to black shale formation 313
- Diazomethane  
 adsorption on bentonite, Sardinia 429  
 interlayer polymerization to polymethylene, bentonite, Sardinia 429
- Dien (diethylenetriamine)  
 complexes with Cu and Ni on heated hectorite 269
- Differential thermal analysis (DTA)  
 coupled with TGA, XRD, zeolite analysis 423  
 of acid-treated trimethylsilylation derivative of halloysite 53  
 of Al-substituted ferrihydrite 105  
 of Al-substituted hematite 105  
 of clays, Las Aguilas Formation, Argentina 433  
 of halloysite and trimethylsilylation derivative 53  
 of heulandite, stilbite 423
- Diffusion  
 interlamellar water activation energy, in montmorillonite-pyridine/water intercalate 140  
 interlamellar water measurement by quasioelectric neutron scattering 140
- Diffusion of interlamellar water in the 23.3 Å Na-montmorillonite:pyridine/H<sub>2</sub>O intercalate by quasioelastic neutron scattering**, The, by J. M. Adams, C. Breen, and C. Riekel 140
- Dilatometry (Thermal mechanical analysis)  
 clays, Las Aguilas Formation, Argentina 433  
 of kaolinite, comparison with TGA data 11  
 of kaolinite pellets with heating 11
- Distinguished member award  
 Sturgis W. Bailey 79, 157  
 William F. Bradley 79  
 George W. Brindley 79  
 José J. Fripiat 79, 158  
 Ralph E. Grim 79  
 Marion L. Jackson 79, 307  
 Walter D. Keller 79  
 Paul F. Kerr 79  
 Clarence S. Ross 79
- Dithionite  
 buffer, selective dissolution of Al-goethite by 368  
 for nontronite, effect 63  
 -produced color changes in nontronite 63  
 -reduced nontronite, IR spectra 63  
 -reduced nontronite, Mössbauer spectra 63
- Donbassite  
 nomenclature 238
- E
- EBERL, D. D. (with H. N. KHOURY), Bubble-wall shards altered to montmorillonite 291
- Effect of hydroxy-aluminum precipitation on the exchange properties of montmorillonite**, The, by R. Keren 303
- Effect of ionic strength and ion pair formation on the adsorption of nickel by kaolinite**, by S. V. Mattigod, A. S. Gibali, and A. L. Page 411
- Electrolyte (see Salt solution)
- Electron microprobe analysis  
 of plagioclase grains in volcanic ash 209
- Electron microscopy (see Transmission electron microscopy, Scanning electron microscopy)
- Electron paramagnetic resonance (EPR)  
 of bentonite, Sardinia, diazomethane-adsorbed 429  
 of Cu-loaded hectorite 269  
 of cationic spin probes on hectorite 97  
 of citrate-bicarbonate-dithionite treated hectorite 224  
 of dien and tetren complexes of Cu and Ni on hectorite 269  
 of hectorite 224  
 of VO<sup>2+</sup> on hectorite 91
- Electron transfer mechanism  
 in benzidine-hectorite reaction 224
- Electrostatic  
 force between adsorbed cations and water molecules in montmorillonite 145  
 potential energy calculations as function of hydroxyl orientation 213
- Elemental analysis (see Chemical analysis)
- Emission spectroscopy  
 of Fe-rich montmorillonite from Pacific deep-sea sediments 185
- Enstatite  
 product of thermal treatment of chrysotile 161  
 topotactic growth from forsterite 161
- Enthalpy  
 standard, Ca-, K-exchange equilibria for montmorillonite 393
- Entropy  
 Ca-, K-exchange equilibria for montmorillonite 393  
 surface, relation to selectivity coefficients, montmorillonite 417
- Erionite  
 anhydrous cell composition 231  
 cation-selectivity series and coefficients 231  
 Jersey Valley, Nevada, cation-exchange properties 231
- ERRE, L. (with J. C. BART, F. CARIATI, C. GESSA, G. MICERA, and P. PIU), Formation of polymeric species in the interlayer of bentonite 429

- ESLINGER, ERIC (with PATRICK HIGHSMITH, DOYLE ALBERS, and BENJAMIN DEMAYO), Role of iron reduction in the conversion of smectite to illite in bentonites in the Disturbed Belt, Montana 327
- ESPINASSE, P. (with B. SIFFERT), Acetamide and polyacrylamide adsorption onto clays: Influence of the exchangeable cation and the salinity of the medium 279
- Estimate of clay-mineral content: Additions of proportions of soil clay to constant standard**, by R. V. Ruhe and C. G. Olson 322
- EVANS, S. (with J. M. ADAMS), Determination of the cation-exchange capacity (layer charge) of small quantities of clay minerals by nephelometry 137
- EVANS, S. (with J. M. ADAMS), Exchange and selective surface uptake of cations by layered silicates using X-ray photoelectron spectroscopy (XPS) 248
- Evidence for imogolite in Canadian soils**, by G. J. Ross and H. Kodama 297
- Excess functions  
Ca-, K-exchange equilibria for montmorillonite 393
- Exchange (see Cation exchange)
- Exchange and selective surface uptake of cations by layered silicates using X-ray photoelectron spectroscopy (XPS)**, by J. M. Adams, and S. Evans 248
- Expanded clay  
intersalation products of smectite and vermiculite 201
- F
- Ferri-annite  
hydroxyl orientation in 213
- Ferrihydrite  
adsorption of hydroxy-carboxylic acids on 402  
analysis by acid-ammonium oxalate extraction 195  
analysis of Fe and Al by AA 195  
crystallization to goethite, hematite, influence of organic anions 402  
determination of Fe and Al in, by AA 105  
DTA of Al-substituted 105  
formation in KOH solutions 105  
preparation in KOH solution 195  
products of ageing of Al-substituted 105  
transformation to hematite, goethite, influence of [Al], [OH], temperature 195
- Fiber  
chrysotile, TEM of 161  
chrysotile, thermal decomposition of 161  
imogolite, formation on weathered plagioclase 209  
TEM, SEM of imogolite 209
- FITZPATRICK, R. W. (with U. SCHWERTMANN, R. M. TAYLOR, and D. G. LEWIS), The influence of aluminum on iron oxides. Part II. Preparation and properties of Al-substituted hematites 105
- FLANK, W. H., Behavior of kaolinite pellets at elevated temperatures 11
- Formation conditions of authigenic kaolinite and calcite in coals by stable isotope determinations**, by Y-N. Shieh and T. G. Suter 154
- Formation of polymeric species in the interlayer of bentonite**, by J. C. Bart, F. Cariati, L. Erre, C. Gessa, G. Micera, and P. Piu 429
- Forsterite  
nucleation from amorphous chrysotile fibrils 161  
SAD of, from heated chrysotile 161  
topotactic formation from heated chrysotile 161  
topotactic relation with enstatite from heated chrysotile 161
- FRASER, A. R. (with J. D. RUSSELL and B. A. GOODMAN), Infrared and Mössbauer studies of reduced nontronites 63, 239
- Free energy  
standard, Ca-, K-exchange equilibria for montmorillonite 393  
standard, of Ni adsorption on kaolinite 411
- Freeze-drying procedure  
modified, for TEM of hectorite 291
- Fripiat, José J. distinguished member award 79, 158
- G
- Gas-liquid chromatography  
degradation products of parathion, measurement 72  
of parathion degradation on clay surfaces 72
- Genesis (see Diagenesis, Authigenesis)
- GERSTL, Z. (with U. MINGELGRIN), A note on the adsorption of organic molecules on clays 285
- GESSA, C. (with J. C. BART, F. CARIATI, L. ERRE, G. MICERA, and P. PIU), Formation of polymeric species in the interlayer of bentonite 429
- GIBALI, A. S. (with S. V. MATTIGOD and A. L. PAGE), Effect of ionic strength and ion pair formation on the adsorption of nickel by kaolinite 411
- Gibbsite  
in biotite from weathered granite, Australia 349, 361  
oriented growth in altered biotite 361
- GIESE, R. F. JR., Hydroxyl orientations in 2:1 phyllosilicates 213
- GILKES, R. J. (with ANCHALEE SUDDHIPRAKARN), Biotite alteration in deeply weathered granite: I. Morphological, mineralogical, and chemical properties 349
- GILKES, R. J. (with ANCHALEE SUDDHIPRAKARN), Biotite alteration in deeply weathered granite: II. The oriented growth of secondary minerals 361

- Glauconite**  
 New Zealand, crystallinity index 339  
 New Zealand, genesis in marine environments 399  
 New Zealand, morphology index 339  
 New Zealand, Mössbauer spectra 339  
 New Zealand, oxidation state of Fe in 339  
 New Zealand, XRF analysis 339  
 nomenclature 238
- Glycine**  
 adsorption on montmorillonite 19  
 IR of adsorption complexes with montmorillonite 19
- Glycolation**  
 in quantitative mineral analysis by XRD 322
- Glyphosate (Roundup)**  
 adsorption on montmorillonite 19, 29  
 CEC of iso-propylammonium ion on homoionic montmorillonite 29  
 intercalate formation by sorption on montmorillonite 29  
 IR of adsorption complexes with montmorillonite 19, 29  
 Zwitterion formation in interlayer space of montmorillonite 19
- Goethite**  
 abundance, variation with depth in biotite from weathered granite 349  
 Al-bearing, IR, XRD 368  
 Al-bearing, selective dissolution using dithionite buffer 368  
 Al-bearing, Venezuelan laterite 368  
 Al-substituted, formation from ferrihydrite 195  
 analysis by XRD 195  
 crystallization of, from ferrihydrite, dependence on Fe-organic acid complexes 402  
 crystallization of, from ferrihydrite, influence of organic anions 402  
 effect of Al on formation 105, 195  
 formation from ferrihydrite 195  
 formation, influence of [OH], [Al], temperature 195  
 hexagonal growths on altered biotite from weathered granite 349, 361  
 synthetic, selective dissolution 368
- GOODMAN, B. A. (with J. D. RUSSELL and A. R. FRASER),** Infrared and Mössbauer studies of reduced nontronites 63, 239
- Granite**  
 oriented growth of biotite alteration products 361  
 weathered, altered biotite from Australia 349, 361
- Grim, Ralph E.** distinguished member award 79
- GÜVEN, NECIP (with L. L. CARNEY),** The hydrothermal transformation of sepiolite to stevensite and the effect of added chlorides and hydroxides 253
- H**
- HALL, S. H. (with S. W. BAILEY),** Cation ordering pattern in amesite 241
- Halloysite**  
 in kaolinite deposits, Las Aguilas Formation, Argentina 433  
 TEM, SEM, Las Aguilas Formation, Argentina 433  
 trimethylsilylation derivative, DTA, IR, XRD 53  
 trimethylsilylation derivative, synthesis 53
- HATHAWAY, J. C. (with L. J. POPPE),** A metal-membrane mount for X-ray powder diffraction 152
- Heat of immersion**  
 of water in mixed Na/Ca montmorillonite 145
- HEATH, G. R. (with N. G. PISIAS),** A method for the quantitative estimation of clay minerals in North Pacific deep-sea sediments 175
- Heavy metals**  
 abundance of Cu, Zn, Mn, in Fe-montmorillonite Pacific deep-sea sediments 185
- Hectorite**  
 basal spacings of TEMPAMINE<sup>+</sup>-exchanged 97  
 cationic spin probes on K-exchanged 97  
 dien and tetren complexes of Cu and Ni on hectorite 269  
 electron microscopy of phenanthroline intercalation 201  
 electron spin resonance of organic cation adsorbed 97  
 electron spin resonance of VO<sup>2+</sup>-exchanged 91  
 EPR spectrum 269  
 intercalate with phenanthroline compounds, thermal stability, surface area 201  
 modified freeze-drying procedure for TEM 291  
 reactivity of adsorbed and structural iron in, with benzidine 224  
 reduced-charge, layer charge-CEC relationship 387  
 surface retention and mobility of VO<sup>2+</sup> 91  
 TEM, Hector, California 291
- HEIN, J. R. (with H-W. YEH and ELAINE ALEXANDER),** Origin of iron-rich montmorillonite from the manganese nodule belt of the North Equatorial Pacific 185
- Hematite**  
 Al in, determined by XRD and chemical analysis 105  
 Al-substituted, DTA 105  
 Al-substituted, IR 105  
 Al-substituted, synthesis 105  
 Al-substituted, TEM, SEM 105  
 analysis by XRD 195

- crystallization of, from ferrihydrite, influence of organic anions on 402  
 formation from ferrihydrite 195, 402  
 formation, influence of [Al], [OH], temperature 195  
 in biotite from weathered granite, Australia 349  
 influence of Al on crystallinity 105  
 morphology 402  
 unit-cell, with Al substitution 105
- Herbicide (see Glyphosate)
- Heulandite  
 DTA, TGA, XRD coupled analysis 423  
 structural analysis 423  
 water adsorption isotherms 423
- High surface area solids obtained by reaction of montmorillonite with zirconyl chloride**, by S. Yamanaka and G. W. Brindley 119
- HIGHSMITH, PATRICK (with ERIC ESLINGER, DOYLE ALBERS, and BENJAMIN DEMAYO), Role of iron reduction in the conversion of smectite to illite in bentonites in the Disturbed Belt, Montana 327
- HOFMANN, D. A. (with G. G. CHRISTOPH, C. E. CORBATÓ, and R. T. TETTENHORST), The crystal structure of boehmite 81
- Hofmann-Klemen procedure  
 reduced-charge montmorillonite 119
- HOWER, JOHN, distinguished member citation, Marion L. Jackson 307
- HUYSKENS, P. L. (with M. S. STUL, J. B. UYTTERHOEVEN, and J. DE BOCK), The adsorption of n-aliphatic alcohols from dilute aqueous solutions on RNH<sub>3</sub>-montmorillonites. II. Interlamellar association of the adsorbate 377
- Hydration  
 of mixed Na/Ca-montmorillonite 145
- Hydrazine  
 -reduced nontronite IR spectra 63  
 -reduced nontronite Mössbauer spectra 63
- Hydrocarbon  
 accumulation in black shale 327  
 content of black shale 313
- Hydrogen-hydroxyl bonding  
 amesite, Antarctica 241
- Hydrolysis  
 degradation of parathion on montmorillonite, process 72  
 effect of, on adsorption of acetamide and polyacrylamide 279  
 of VO<sup>2+</sup> on hydrated hectorite surfaces 91
- Hydrothermal stability  
 sepiolite 253  
 sepiolite in salt solution 253
- Hydrothermal transformation of sepiolite to stevensite and the effect of added chlorides and hydroxides**, The, by Necip Güven and L. L. Carney 253
- Hydrous mica  
 hydrothermal alteration products 1
- Hydroxy complexes  
 by thermal treatment of zirconyl-exchanged montmorillonite 119  
 by thermal treatment of zirconyl-exchanged reduced-charge montmorillonite 119
- Hydroxy-carboxylic acid  
 groups as templates for hematite nucleation 402  
 influence on crystallization of ferrihydrite to hematite, goethite 402
- Hydroxyl  
 in 2:1 phyllosilicates, electrostatic energy calculation 213  
 influence of [OH] on goethite, hematite formation from ferrihydrite 195  
 orientation in 2:1 phyllosilicates, measured, predicted 213
- Hydroxyl bonding (see Hydrogen-hydroxyl bonding)
- Hydroxyl orientations in 2:1 phyllosilicates**, by R. F. Giese, Jr. 213
- I
- Ideal behavior in Na<sup>+</sup>-trace metal cation exchange on Camp Berteau montmorillonite**, by Garrison Spósito and S. V. Mattigod 15
- Illinois Coal Basin  
 calcite and kaolinite in cleat fillings 154
- Illite  
 abundance map, North Pacific deep-sea sediments 175  
 abundance, Biscaye technique vs. internal standard technique 175  
 abundance, deep-sea sediments, Mn-nodule belt, North Equatorial Pacific 185  
 acid-base titration curves 113  
 content of clay sludges from oil sand 301  
 formation by demixing of interstratified Ca-, K-montmorillonite 393  
 in kaolinite deposits, Las Aguilas Formation, Argentina 433  
 increase of, in illite/smectite in Montana bentonite 327  
 quantitative analysis in deep-sea sediments 175  
 quantitative mineral analysis by XRD 322  
 release of Al from, in acid-base titration 113  
 /smectite mixed layer, chemical analysis 327  
 /smectite mixed layer, structural charge 327  
 /smectite mixed layer, XRD 327
- Imogolite  
 electron probe analyses 209  
 formation on weathered plagioclase from volcanic ash 209  
 in nonvolcanic soils of Canada 297  
 TEM, SEM 209, 297

- Influence of aluminum on iron oxides, The. Part II. Preparation and properties of Al-substituted hematites**, by U. Schwertmann, R. W. Fitzpatrick, R. M. Taylor, and D. G. Lewis 105
- Influence of aluminum on the formation of iron oxides, The. IV. The influence of [Al], [OH], and temperature**, by D. G. Lewis and U. Schwertmann 195
- Influence of heat-stable intercalate on the rate of dehydroxylation of smectite, The**, by R. H. Loeppert, Jr. and M. M. Mortland 373
- Influence of organic anions on the crystallization of ferrihydrite**, by R. M. Cornell and U. Schwertmann 402
- Infrared and Mössbauer studies of reduced nontronites**, by J. D. Russell, B. A. Goodman, and A. R. Fraser 63 (Erratum 239)
- Infrared spectroscopy (IR)
- Al-goethite in Venezuelan laterites 368
  - bentonite, Sardinia, adsorbed diazomethane 429
  - of Al-substituted hematites 105
  - of bitumen fractions of oil sands 301
  - of dien and tetren complexes of Cu and Ni on hectorite 269
  - of glycine sorbed on homoionic montmorillonite 19, 29
  - of glyphosate (Roundup) sorbed on montmorillonite 19, 29
  - of halloysite and trimethylsilylation derivative 53
  - of homoionic montmorillonite-nylon polymer complexes 129
  - of hydrazine and dithionite-reduced nontronite 63
  - of montmorillonite intercalate from decomposed Ni(phen)<sub>3</sub>SO<sub>4</sub> 368
  - of nontronite intercalate 368
- INOUE, ATSUYUKI (with HIDEO MINATO), Ca-K exchange reaction and interstratification in montmorillonite 393
- Insecticide (see Parathion)
- Interaction between Roundup (glyphosate) and montmorillonite, The. Part I. Infrared study of the sorption of the glyphosate by montmorillonite**, by S. Shoval and S. Yariv 19
- Interaction between Roundup (glyphosate) and montmorillonite, The. Part II. Ion exchange and sorption of iso-propylammonium by montmorillonite**, by S. Shoval and S. Yariv 29
- Intercalate
- charge density of natural smectites 1
  - formation by sorption of glyphosate (Roundup) on montmorillonite 29
  - smectitic mica-like, of interstratified minerals 1
- Intercalation
- complexes diffusion of interlamellar water in, by quasielectric neutron scattering 140
  - complexes from dehydroxylated zirconyl-exchanged montmorillonite 119
  - complexes from dehydroxylated zirconyl-exchanged reduced-charge montmorillonite 119
  - complexes of 6-aminocaproic acid in homoionic montmorillonite 129
  - complexes of pyridine/water-Na-montmorillonite 140
  - compounds, heat stable, influence on dehydroxylation of smectite 373
  - compounds in montmorillonite, nontronite from decomposed Ni(phen)<sub>3</sub>SO<sub>4</sub> 373
  - of hectorite, vermiculite and metal phenanthroline compounds 201
  - phase, from adsorption of alcohols of RNH<sub>3</sub>-montmorillonite 377
  - phase, orientation of, in RNH<sub>3</sub>-montmorillonite 377
  - surface area of fixed intercalates of hectorite, vermiculite, montmorillonite and phenanthroline compounds 201
  - thermal stability of hectorite, vermiculite with phenanthroline compounds 201
- Interlayer (see also Intercalate, Intercalation)
- polymerization to polymethylene of diazomethane on bentonite, Sardinia 429
  - polymethylene in bentonite, hydrophobic properties 429
- Interlayer bonding
- amesite, Antarctica 241
- Interlayer formation (see Tactoid)
- Internal standard
- method of quantitative clay analysis of deep-sea sediments 175
- Interpretation of cation selectivity variations in M<sup>+</sup>-M<sup>+</sup> exchange on clays, An**, by M. B. McBride 417
- Intersalation (see Intercalation)
- Interstratification (see also Mixed layer)
- random, of Ca-, K-exchanged montmorillonite 393
- Ion-exchange properties of the natural zeolite erionite**, by H. S. Sherry 231
- Ion-pair formation
- effect of, on Ni adsorption on kaolinite 411
- Ion speciation
- effect of, on Ni adsorption on kaolinite 411
- Iron
- aluminum solid solution in goethite 368
  - adsorbed, structural in hectorite, reaction with benzidine 224
  - complexes with hydroxy-carboxylic acids, influence on crystallization of ferrihydrite 402
  - Mössbauer spectra of, in nontronite 63
  - nature of, in octahedral and tetrahedral sites in nontronite 63

- oxide Al-substituted, synthesis 105  
 oxides effect of, on ESR vanadyl exchanged hec-  
 torite 91  
 reduction of structural, with benzidine 224  
 reduction of, in illite/smectite in bentonites, Dis-  
 turbed Belt, Montana 327  
 reduction of, in nontronite by hydrazine and  
 dithionite 63  
 source, Fe-montmorillonite, Pacific deep-sea sed-  
 iments 185  
 valance state changes in glauconite genesis 339  
 valance state in illite/smectite by Mössbauer spec-  
 troscopy 327

Iron oxide (see Hematite, Goethite, Ferrihydrite)

## J

- Jackson, Marion L. distinguished member award 79,  
 307  
 Japan  
 book review, *Clays and Clay Minerals of Japan*,  
 edited by T. Sudo and S. Shimoda 240  
 JOHNSON, L. J. (with C. H. CHU), Cation-exchange  
 behavior of clays and synthetic aluminosilica gels  
 87

## K

- K-displacement CEC  
 compared with methylene blue CEC 87  
 of amorphous aluminosilicate gels 87  
 of montmorillonite 87  
 of soil clays 87  
 of vermiculite 87  
 Kaolinite  
 abundance, Biscaye technique vs. internal stan-  
 dard technique 175  
 abundance, deep-sea sediments, Mn-nodule belt,  
 North Equatorial Pacific 185  
 acid-base behavior of edge sites 57  
 acid-base titration curves 113  
 behavior of pellets at elevated temperature 11  
 bonding energy charges with heating 11  
 Ca-saturated, adsorption and degradation of  
 parathion 72  
 clay deposits, Las Aguilas Formation, Argentina  
 433  
 content of clay sludges from oil sand 301  
 dehydroxylation 11  
 formation by lateritic weathering of granite, Las  
 Aguilas Formation, Argentina 433  
 formation in cleat fillings in coal 154  
 in biotite from weathered granite, Australia 349  
 K-saturated, titration in non-aqueous solvents  
 57  
 pelleted, shrinkage 11

- pelleted, thermomechanical analysis (TMA) 11  
 pH-dependent sites of, effect of solvents 57  
 quantitative analysis in deep-sea sediments 175  
 quantitative mineral analysis by XRD 322  
 release of Al from, in acid-base titration 113  
 TEM, SEM, Las Aguilas Formation, Argentina  
 433  
 transformation to mullite and silica with heating  
 11  
 two-stage shrinkage of pellets with heating 11  
 XRF shifts with heating 11  
 KATO, CHUZO (with KAZUYUKI KURODA), Synthesis  
 of the trimethylsilylation derivative of halloysite  
 53  
 KATO, CHUZO (with KAZUYUKI KURODA and MASA-  
 HIRO MISAWA), Preparation of montmorillonite-  
 nylon complexes and their thermal properties  
 129  
 Keller, Walter D. distinguished member award 79  
 KEREN, R., The effect of hydroxy-aluminum precipi-  
 tation on the exchange properties of montmoril-  
 lonite 303  
 KEREN, R. (with I. SHAINBERG), Water vapor iso-  
 therms and heat of immersion of Na/Ca-montmo-  
 rillonite systems. II. Mixed systems 145  
 KERR, G. W., book review, *Natural Zeolites: Occur-  
 rence, Properties, Use*, edited by L. B. Sand and  
 F. A. Mumpton 309  
 Kerr, Paul F. distinguished member award 79  
 KESSICK, M. A., Complex acids and their role in the  
 stability of clay sludges from oil sands 301  
 KHOURY, H. N. (with D. D. EBERL), Bubble-wall  
 shards altered to montmorillonite 291  
 KODAMA, H. (with G. J. ROSS), Evidence for imogolite  
 in Canadian soils 297  
 KODAMA, H. (with S. W. BAILEY, G. W. BRINDLEY,  
 and R. T. MARTIN), Report of The Clay Minerals  
 Society Nomenclature Committee for 1977 and  
 1978 238  
 Kupferschiefer  
 metal-enrichment in 313  
 KURODA, KAZUYUKI (with CHUZO KATO), Synthesis  
 of the trimethylsilylation derivative of halloysite  
 53  
 KURODA, KAZUYUKI (with CHUZO KATO and MASA-  
 HIRO MISAWA), Preparation of montmorillonite-  
 nylon complexes and their thermal properties  
 129

## L

- Lactic acid (see Hydroxy-carboxylic acid)  
 LAGALY, G., The "layer charge" of regular interstrat-  
 ified 2:1 clay minerals 1  
 LAMKIN, GWEN (with J. L. MCATEE, JR.), A modified

- freeze-drying procedure for the electron microscopic examination of hectorite 293
- Laterite  
Al-goethite in, Venezuela 368  
selective dissolution of 368  
weathering of granite to clay deposits, Las Aguilas Formation, Argentina 433
- Lattice image  
of chrysotile and heated products by high resolution TEM 161
- Layer charge  
density distribution, reduced-charge montmorillonite 387  
of regular interstratified 2:1 clays 1  
relationship with CEC in montmorillonite 387
- Layer charge-cation-exchange capacity relationships in montmorillonite**, by André Maes, M. S. Stul, and Adrien Cremers 387
- "Layer charge" of regular interstratified 2:1 clay minerals, The**, by G. Lagaly 1
- Lepidolite  
hydroxyl orientation 213
- LEWIS, D. G. (with U. SCHWERTMANN), The influence of aluminum on the formation of iron oxides. IV. The influence of [Al], [OH], and temperature 195
- LEWIS, D. G. (with U. SCHWERTMANN, R. W. FITZPATRICK, and R. M. TAYLOR), The influence of aluminum on iron oxides. Part II. Preparation and properties of Al-substituted hematites 105
- LEWIS, D. W. (with D. M. MCCONCHIE, J. B. WARD, and V. H. MCCANN), A Mössbauer investigation of glauconite and its geological significance 339
- Light scattering (see Nephelometry)
- LOEPPERT, R. H., JR. (with M. M. MORTLAND), The influence of heat-stable intercalate on the rate of dehydroxylation of smectite, 373
- LOEPPERT, R. H. JR. (with M. M. MORTLAND and T. J. PINNAVAIA) Synthesis and properties of heat-stable expanded smectite and vermiculite 201
- LOEPPERT, R. H. JR. (with L. W. ZELAZNY and R. G. VOLK), Titration of pH-dependent sites of kaolinite in water and selected non-aqueous solvents 57
- LOHNES, R. A. (with E. R. TUNCER and T. DEMIREL), Quantitative analysis of elements in sediments and soils by X-ray fluorescence: A reply 306
- M
- MAES, ANDRÉ (with M. S. STUL and ADRIEN CREMERS), Layer charge-cation-exchange capacity relationships in montmorillonite 387
- Magarite  
hydroxyl orientation 213
- Manganese nodule belt  
North Equatorial Pacific, authigenic Fe-montmorillonite 185  
North Equatorial Pacific, clay mineral abundance 185
- MARTIN, R. T. (with S. W. BAILEY, G. W. BRINDLEY, and H. KODAMA), Report of The Clay Minerals Society Nomenclature Committee for 1977 and 1978 238
- MATTIGOD, S. V. (with A. S. GIBALI and A. L. PAGE), Effect of ionic strength and ion pair formation on the adsorption of nickel by kaolinite 411
- MATTIGOD, S. V. (with GARRISON SPOSITO), Ideal behavior in Na<sup>+</sup>-trace metal cation exchange on Camp Berteau montmorillonite 125
- MCALEE, J. L. JR. (with GWEN LAMKIN), A modified freeze-drying procedure for the electron microscopic examination of hectorite 293
- MCBRIDE, M. B., book review, *The Chemistry of Soil Constituents*, edited by D. J. Greenland and M. H. B. Hayes 309
- MCBRIDE, M. B., Cationic spin probes on hectorite surfaces: Demixing and mobility as a function of adsorption level 97
- MCBRIDE, M. B., Interpretation of cation selectivity variations in M<sup>+</sup>-M<sup>+</sup> exchange on clays 417
- MCBRIDE, M. B., Mobility and reactions of VO<sup>2+</sup> on hydrated smectite surfaces 91
- MCBRIDE, M. B., Reactivity of adsorbed and structural iron in hectorite as indicated by oxidation of benzidine 224
- MCCANN, V. H. (with D. M. MCCONCHIE, J. B. WARD, and D. W. LEWIS), A Mössbauer investigation of glauconite and its geological significance 339
- MCCONCHIE, D. M. (with J. B. WARD, V. H. MCCANN, and D. W. LEWIS), A Mössbauer investigation of glauconite and its geological significance 339
- Meeting announcement  
16th annual, The Clay Minerals Society 310  
4th International Conference on Zeolites 311  
5th International Conference on Asbestos 311
- MENDELOVICI, E. (with SH. YARIV and R. VILLALBA), Aluminum-bearing goethite in Venezuelan laterites 368
- Metal enrichment  
in black shale 313
- Metal ore deposits  
in black shale 313
- Metal-membrane mount  
for powder XRD, silver 152
- Metal-membrane mount for X-ray powder diffraction, A**, by L. J. Poppe and J. C. Hathaway 152
- Methane  
formation in black shale by bacterial reduction of CO<sub>2</sub> 313
- Method for the quantitative estimation of clay minerals**

- in North Pacific deep-sea sediments, A**, by G. R. Heath and N. G. Pisias 175
- Methyl**  
 ammonium-exchanged attapulgites, adsorption of parathion on 283  
 ammonium-exchanged montmorillonite, adsorption of parathion on 285
- Methylene blue (MB) CEC**  
 compared with K-displacement CEC 87  
 of amorphous aluminosilicate gels 87  
 of montmorillonite 87  
 of soil clays 87  
 of vermiculite 87
- Mica** (see also Muscovite, Biotite, Illite, etc.)  
 hydroxyl orientations in 213
- MICERA, G.** (with J. C. BART, F. CARIATI, L. ERRE, C. GESSA, and P. PIU), Formation of polymeric species in the interlayer of bentonite 429
- Microanalysis**  
 for CEC, by nephelometry 137  
 of calcium and barium 137
- Micropore**  
 zeolite structures 423
- MIDDLETON, S.** (with D. J. CEBULA, R. K. THOMAS, R. H. OTTEWILL, and J. W. WHITE), Neutron diffraction from clay-water systems 39
- MINATO, HIDEO** (with ATSUYUKI INOUE), Ca-K exchange reaction and interstratification in montmorillonite 393
- MINGELGRIN, U.** (with SARINA SALTZMAN), Surface reactions of parathion on clays 72
- MINGELGRIN, U.** (with Z. GERSTL), A note on the adsorption of organic molecules on clays 285
- MISAWA, MASAHIRO** (with CHUZO KATO and KAZUYUKI KURODA), Preparation of montmorillonite-nylon complexes and their thermal properties 129
- Mixed layer** (see also Interstratification)  
 charge density of regular 2:1 clays 1  
 charge of regular 2:1 clays 1  
 Fe<sup>2+</sup> in illite/smectite, increase with burial metamorphism 327  
 glauconite/illite, New Zealand, Mössbauer study of 339  
 illite/smectite, in bentonites, Disturbed Belt, Montana, chemical analysis 327  
 illite/smectite, Mössbauer spectroscopy 327  
 illite/smectite, structural changes 327  
 illite/smectite, XRD 327  
 in altered biotite from weathered granite, Australia 361
- Mobility and reactions of VO<sup>2+</sup> on hydrated smectite surfaces**, M. B. McBride 91
- Modified freeze-drying procedure for the electron microscopic examination of hectorite, A**, by J. L. McAtee, Jr. and Gwen Lamkin 293
- Montana**  
 Disturbed Belt, Sweetwater Arch, chemical analysis of bentonites 327  
 Disturbed Belt, Sweetwater Arch, smectite conversion to illite in 327
- Montmorillonite** (see also Bentonite, Smectite)  
 acid-base titration curves 113  
 adsorption of anionic and cationic components of glyphosate (Roundup) 19, 29  
 adsorption of glycine 19  
 adsorption of n-aliphatic alcohols on alkylammonium-exchanged 377  
 adsorption of parathion on 285  
 adsorption of polyacrylamide and acetamide on Na and Al-exchanged 279  
 adsorption-catalyzed degradation of parathion 72  
 alkylammonium exchanged mixed layer with mica 1  
 alteration of bubble-wall shards to 291  
 Amargosa Desert, southern Nevada 291  
 aminocaproic acid complexes, synthesis 129  
 authigenic, deep-sea sediments, distribution 185  
 basal spacing of Na-montmorillonite:pyridine/H<sub>2</sub>O intercalate 140  
 benzidine reaction with 224  
 Ca-, K-exchange equilibria, entropy 393  
 Ca-, K-exchange equilibria, standard enthalpy 393  
 Ca-, K-exchange equilibria, standard free energy 393  
 Ca-, K-exchanged, equivalent to random interstratified phase 393  
 Camp Berteau, CEC 119  
 cation density of mixed layer with mica 1  
 cation-exchange equations, statistical mechanics derivation 417  
 cation-exchange selectivity variation, statistical mechanics treatment 417  
 CEC of iso-propylammonium ion on homoionic forms 29  
 CEC of zirconyl-exchanged, after heating 119  
 CEC, by nephelometry 137  
 chemical composition, Aterazawa, Japan 393  
 dehydroxylation, influence of heat-stable intercalate 373  
 dehydroxylation of zirconyl-exchanged 119  
 distinction from vermiculite by methylene blue cation-exchange 87  
 ESR of 224  
 Fe-rich, formula, Pacific deep-sea sediments 185  
 Fe-rich, Mn-nodule belt, North Equatorial Pacific 185  
 fixation of zirconium 119

- illite mixed layer, bentonites in Disturbed Belt, Sweetwater Arch, Montana 327
- illite mixed layer, chemical analysis, XRD 327
- illite mixed layer, Fe<sup>2+</sup> in, by Mössbauer spectroscopy 322
- intercalate formation by sorption of glyphosate (Roundup) 29
- intercalate in, by decomposition of Ni(phen)<sub>3</sub>SO<sub>4</sub> 373
- intercalate with phenanthroline compounds, thermal stability, surface area 201
- interlayer pillers from zirconyl-exchanged 119
- ion exchange with zirconyl chloride 119
- ion-exchange properties, effects of tactoid formation on 293
- IR of adsorption complexes with glycine 19, 29
- IR of adsorption complexes with glyphosate (Roundup) 19, 29
- layer charge of mixed layer with mica 1
- layer charge-CEC relationship 387
- methylammonium-exchanged, adsorption of parathion on 285
- methylene blue exchange 87
- mixed Na/Ca, basal spacings at different relative humidities 145
- mixed Na/Ca, heat of immersion in water 145
- mixed Na/Ca, water vapor isotherms 145
- modified freeze-drying technique for TEM 291
- neutron diffraction of hydrated 39
- nylon polymer complexes, activation energy 129
- nylon polymer complexes, IR, TGA, XRD 129
- orientation of water molecules by neutron diffraction 39
- oxygen isotope analysis, Pacific deep-sea sediments 185
- pyridine/water intercalate, interlamellar water diffusion 140
- quantitative analysis in deep-sea sediments 175
- reduced charge, by Hofmann-Klemen procedure 119
- release of Al from, in acid-base titration 113
- SEM of bubble-wall shard pseudomorph, honeycomb structure 291
- source of Fe, Al, Si for, Pacific deep-sea sediments 185
- surface area of zirconyl-exchanged 119
- tactoid formation of Al-exchanged, effect of, on adsorption 279
- thermal stability of zirconyl-exchanged 119
- Upton, Wyoming, CEC 87
- vermiculite, quantitative mineral analysis by XRD 322
- Morphology**
- changes of thermally treated chrysotile 161
- classification of New Zealand glauconite 339
- hematite, crystallized from ferrihydrite, influence of organic anions, by TEM 402
- imogolite in nonvolcanic soils of Canada 297
- kaolinite, halloysite, pyrophyllite in clay deposits, Las Aguilas Formation, Argentina by TEM 433
- montmorillonite from alteration of bubble-wall shards 291
- of biotite in deeply weathered granite by optical microscopy, SEM, TEM 349
- of imogolite fibers formed from weathered plagioclase 209
- oriented growth of biotite alteration products 361
- stevensite formed by hydrothermal transformation of sepiolite 253
- MORTLAND, M. M. (with R. H. LOEPPERT, JR.), The influence of heat-stable intercalate on the rate of dehydroxylation of smectite 373
- MORTLAND, M. M. (with R. H. LOEPPERT, JR. and T. J. PINNAVAIA), Synthesis and properties of heat-stable expanded smectite and vermiculite 201
- Mössbauer investigation of glauconite and its geological significance, A**, by D. M. McConchie, J. B. Ward, V. H. McCann, and D. W. Lewis 339
- Mössbauer spectroscopy
- of illite/smectite in bentonites, Disturbed Belt, Sweetwater Arch, Montana 327
- of New Zealand glauconites 339
- of reduced nontronite 63
- Mullite
- formation by thermal treatment of kaolinite 11
- MURRAY, H. H., book review, *Ceramic Processing Before Firing*, edited by G. Y. Onada, Jr. and L. L. Hench 240
- MURRAY, H. H., distinguished member citation, Sturgis W. Bailey 157
- Muscovite
- acid-base titration curves 113
- hydroxyl orientation 213
- release of Al from, in acid-base titration 113
- N
- NaOH
- dissolution from Venezuelan laterite 368
- Nephelometry
- CEC compared with other techniques 137
- CEC determination of Ca and Ba 137
- Neutron diffraction
- comparison with XRD of montmorillonite 39
- neutron quasidelectric scattering of water in clays 39
- of montmorillonite-water systems 39
- orientation of water molecules in montmorillonite 39

- theory 39  
 variation with relative humidity of montmorillonite 39
- Neutron diffraction from clay-water systems**, by D. J. Cebula, R. K. Thomas, S. Middleton, R. H. Ottewill, and J. W. White 39
- Neutron scattering  
 quasielectric, of interlamellar water pyridine-montmorillonite intercalate 140  
 theoretical basis 140
- New Zealand  
 genesis of glauconite 339  
 glauconites from, Mössbauer study of 339
- Ni(phen)<sub>3</sub>SO<sub>4</sub>  
 intercalate from decomposition product of 373
- Nickel  
 adsorption of kaolinite, effect of ionic strength, ion-pair formation 411
- Nimite  
 nomenclature 238
- Nomenclature  
 celadonite 238  
 chamosite 238  
 clinocllore 238  
 donbassite 238  
 glauconite 238  
 nimite 238  
 pennantite 238  
 report of The Clay Minerals Society Nomenclature committee for 1977 and 1978 238  
 sudoite 238  
 trioctahedral chlorites 238
- Non-aqueous solvents  
 classification scheme 57  
 potentiometric titration of edge sites in K-saturated kaolinite in 57  
 solvation characteristics of ions in 57
- Nontronite  
 dehydroxylation rate, influence of heat-stable intercalate 373  
 dissolution of tetrahedral iron 63  
 intercalate in, by decomposition of Ni(phen)<sub>3</sub>SO<sub>4</sub> 373  
 location for IR and Mössbauer studies, erratum 239  
 reduced by hydrazine and dithionite 63  
 reduced, IR, Mössbauer spectra 63  
 reduced, reoxidation of 63
- Note on the adsorption of organic molecules on clays, A**, by Z. Gerstl and U. Mingelgrin 285
- Nucleation sites  
 for forsterite in thermally treated chrysotile 161
- Nutrient fixation  
 by allophanitic soil 271
- Nylon-montmorillonite polymer complexes  
 activation energy 129  
 IR 129  
 synthesis 129  
 thermal properties 129  
 XRD 129
- O
- O-H. . . O distances  
 of synthetic boehmite 81
- Oil sand  
 bitumen in Athabasca sand 301  
 clay sludge following bitumen extraction 301  
 role of complex acids in stabilization of sludge from 301
- OLSON, C. G. (with R. V. RUHE), Estimate of clay-mineral content: Additions of proportions of soil clay to constant standard 322
- Optical microscopy  
 saprolite and pallid zone material, on weathered granite 349
- Ore deposits  
 in black shales 313
- Organic cation (see Cation spin probe)
- Organic matter  
 accumulation in black shales, models 313  
 association with authigenic glauconite 339  
 methane production by bacterial reduction of CO<sub>2</sub> in black shales 313  
 oxidation of, in change of Fe<sup>2+</sup>/Fe<sup>3+</sup> ratio in illite 327  
 vitrinite in black shales 313
- Organo-hydrophilic interaction  
 concept, discussion of limitations 285
- Orientation  
 of montmorillonite platelets on a Millipore filter 39  
 of water molecules in hydrated montmorillonite by neutron diffraction 39
- Origin of iron-rich montmorillonite from the manganese nodule belt of the North Equatorial Pacific**, by J. R. Hein, H-W. Yeh, and Elaine Alexander 185
- OTTEWILL, R. H. (with D. J. CEBULA, R. K. THOMAS, S. MIDDLETON, and J. W. WHITE), Neutron diffraction from clay-water systems 39
- Oxidation  
 of benzidine, relationship to Fe in hectorite 224  
 state reversal in glauconite 339
- Oxygen  
 isotope O<sup>18</sup> value of montmorillonite, Pacific deep-sea sediments 185  
 isotope O<sup>18</sup>/O<sup>16</sup> ratios of calcite and kaolinite in coal 154
- P
- Pacific deep-sea sediments  
 clay minerals 175, 185

- PAGE, A. L. (with S. V. MATTIGOD and A. S. GIBALI), Effect of ionic strength and ion pair formation on the adsorption of nickel by kaolinite 411
- Palygorskite (see also Attapulgite)
- Paragonite  
hydroxyl orientation 213
- Parathion (O,O-diethyl O-p-nitrophenyl phosphorothioate)  
adsorption-catalyzed degradation on montmorillonite 72  
adsorption on methylammonium-exchanged attapulgite 285  
adsorption on methylammonium-exchanged montmorillonite 285  
by C<sup>14</sup>-counting 72  
by gas-liquid chromatography 72  
IR 72  
O,S-diethyl O-p-nitrophenylphosphate metabolite 72  
reactions on silica gel, alumina 72
- Pennantite  
nomenclature 238
- Pennsylvania  
soil clays, amorphous material content 87  
soil clays, cation-exchange behavior 87
- Pesticide (see Parathion)
- Phenanthroline complex  
of hectorite, vermiculite, montmorillonite by intersalation 201  
of hectorite, vermiculite, thermal decomposition 201
- Phengite  
hydroxyl orientation 213
- Phlogopite  
hydroxyl orientation 213
- Phosphate  
yeast RNA adsorption on allophane 261
- Phosphoria Formation  
ore deposits in 313
- PINNAVAIA, T. J. (with R. H. LOEPPERT, JR. and M. M. MORTLAND), Synthesis and properties of heat-stable expanded smectite and vermiculite 201
- PISIAS, N. G. (with G. R. HEATH), A method for the quantitative estimation of clay minerals in North Pacific deep-sea sediments 175
- PIU, P. (with J. C. BART, F. CARIATI, L. ERRE, C. GESSA, and G. MICERA), Formation of polymeric species in the interlayer of bentonite 429
- Plagioclase  
in Pacific deep-sea sediments 175  
weathered, imogolite formation on 209
- Polanyi-Dubinin theory  
zeolite water adsorption 423
- Polyacrylamide  
adsorption on Na- and Al-montmorillonites 279  
effect of hydrolysis on adsorption by Na- and Al-montmorillonites 279  
effect of strength of salt solution on adsorption by Na- and Al-montmorillonites 279  
effect of tactoid formation on adsorption of 279
- Polyolithionite  
hydroxyl orientation 213
- Polymer complexes  
activation energy of, thermal degradation 129  
by intercalation of 6-aminocaproic acid in homoionic montmorillonite 129  
homoionic montmorillonite-nylon, thermal properties 129  
IR of montmorillonite-nylon 129  
montmorillonite-nylon, activation energy 129  
XRD of montmorillonite-nylon 129
- Polymerization  
of 6-aminocaproic acid in homoionic montmorillonite 129
- POPPE, L. J. (with J. C. HATHAWAY), A metal-membrane mount for X-ray powder diffraction 152
- Potentiometric titration  
acid-base, of kaolinite 113  
acid-base, of mica 113  
acid-base, of montmorillonite 113  
hysteresis effects of adsorbed Al curves 113  
of surface Al ions 113
- Preparation of montmorillonite-nylon complexes and their thermal properties**, by Chuzo Kato, Kazuyuki Kuroda, and Masahiro Misawa 129
- Pyrophyllite  
authigenic, TEM, SEM, Las Aguilas Formation, Argentina 433  
hydroxyl orientation 213
- Q
- Quantitative analysis (see Chemical analysis)
- Quantitative analysis of elements in sediments and soils by X-ray fluorescence: A discussion**, by B. Subramanian 305
- Quantitative analysis of elements in sediments and soils by X-ray fluorescence: A reply**, by E. R. Tuncer, T. Demirel, and R. A. Lohnes 306
- Quantitative clay analysis  
XRD method for Pacific deep-sea clays 175
- Quantitative mineral analysis  
by XRD 322  
of kaolinite, montmorillonite, vermiculite, illite 322  
of soil clays by addition to constant standard 322
- R
- Reactivity of adsorbed and structural iron in hectorite as indicated by oxidation of benzidine**, by M. B. McBride 224
- Rectorite  
-like mixed-layer 2:1 clays, layer charge of 1

- Reduced-charge montmorillonite (RCM)  
 CEC 119  
 formation by Hofmann-Klemen procedure 119  
 from Camp Berteau smectite, basal spacings 387  
 from Camp Berteau smectite, preparation 387  
 hydroxy-zirconium interlayer complexes in, by  
 thermal treatment 119  
 surface area of zirconyl-exchanged, after heating  
 119  
 thermal stability 119
- Reduced concentration concept  
 discussion of limitations of 285
- Reduction  
 of iron in illite in bentonites, Disturbed Belt, Mon-  
 tana 327
- Reflectance spectroscopy  
 of dien, tetren complexes of Cu and Ni on hecto-  
 rite 269
- Refractory clays  
 Las Aguilas Formation, Buenos Aires Province,  
 Argentina 433
- Relative humidity  
 effect of, on neutron diffraction pattern of mont-  
 morillonite 39
- Release of aluminum from aluminosilicate minerals,  
**The. II. Acid-base potentiometric titrations**, by F.  
 Cabrera and O. Talibudeen 113
- Report of The Clay Minerals Society Nomenclature  
 Committee for 1977 and 1978**, by S. W. Bailey, G.  
 W. Brindley, H. Kodama, and R. T. Martin 238
- RIEKEL, C. (with J. M. ADAMS and C. BREEN), The  
 diffusion of interlamellar water in the 23.3 Å Na-  
 montmorillonite:pyridine/H<sub>2</sub>O intercalate by qua-  
 sielastic neutron scattering 140
- Role of iron reduction in the conversion of smectite to  
 illite in bentonites in the Disturbed Belt, Montana**,  
 by Eric Eslinger, Patrick Highsmith, Doyle Al-  
 bers, and Benjamin deMayo 327
- Ross, Clarence S. distinguished member award 79
- ROSS, G. J. (with H. KODAMA), Evidence for imogolite  
 in Canadian soils 297
- Roundup (see Glyphosate)
- RUHE, R. V. (with C. G. OLSON), Estimate of clay-min-  
 eral content: Additions of proportions of soil clay  
 to constant standard 322
- RUSSELL, J. D. (with B. A. GOODMAN and A. R. FRA-  
 SER), Infrared and Mössbauer studies of reduced  
 nontronites 63, 239
- S
- Salt solutions  
 effect of strengths of, on adsorption of acetamide  
 and polyacrylamide 279  
 effect on adsorption of yeast RNA by allophane  
 261  
 hydrothermal stability of sepiolite in 253
- SALTZMAN, SARINA (with U. MINGELGRIN), Surface  
 reactions of parathion on clays 72
- Sample holder  
 modified, for XRD on metal membrane 152
- Sample preparation techniques  
 discussion of, for XRF of soils 305  
 modified freeze-drying, for TEM 293  
 reply to discussion of, for XRF of soils 305
- Scanning electron microscopic study of imogolite for-  
 mation from plagioclase**, by Kazue Tazaki 209
- Scanning electron microscopy (SEM)  
 altered biotite from weathered granite, Australia  
 349  
 altered volcanic glass 291  
 imogolite on weathered plagioclase 209  
 kaolinite, halloysite, Las Aguilas Formation, Ar-  
 gentina 433  
 montmorillonite from bubble-wall shards 291  
 of Li-montmorillonite 39
- SCHOONHEYDT, R. A. (with FIRMIN VELGHE, RITA  
 BAERTS, and J. B. UYTTERHOEVEN), Complexes  
 of diethylenetriamine (dien) and tetraethylenepen-  
 tamine (tetren) with Cu(II) and Ni(II) on hecto-  
 rite 269
- SCHWERTMANN, U. (with D. G. LEWIS), The influence  
 of aluminum on the formation of iron oxides. IV.  
 The influence of [Al], [OH], and temperature 195
- SCHWERTMANN, U. (with R. M. CORNELL), Influence  
 of organic anions on the crystallization of ferri-  
 hydrite 402
- SCHWERTMANN, U. (with R. W. FITZPATRICK, R. M.  
 TAYLOR, and D. G. LEWIS), The influence of alu-  
 minum on iron oxides. Part II. Preparation and  
 properties of Al-substituted hematites 105
- Sedimentation  
 environments of black shales 313  
 in geosynclinal, cratonic basin, shelf environ-  
 ments 313
- Selected area diffraction (SAD)  
 altered biotite from weathered granite, Australia  
 349, 361  
 imogolite, in nonvolcanic Canadian soils 297  
 of thermally treated chrysotile and decomposition  
 products 161
- Selectivity (see Cation exchange)
- Selectivity coefficient  
 effect of tactoid formation on, in montmorillonite  
 303  
 for Ca, Sr, Ba into Na-erionite 231
- Selectivity series  
 for cation exchange on erionite 231
- Sepiolite  
 dislocations in transformation to stevensite 253  
 hydrothermal stability in salt solutions 253  
 hydrothermal transformation to stevensite 253

- mechanism of transformation to stevensite 253  
 talc-like domains in 253
- Serpentine (see individual minerals)
- SHAINBERG, I. (with R. KEREN), Water vapor isotherms and heat of immersion of Na/Ca-montmorillonite systems. II. Mixed systems 145
- Shale  
 black, Chattanooga 313  
 black, definition 313  
 black, deposition 313  
 black, deposition models 313  
 black, diagenesis 313  
 black, distribution in time, space 313  
 black, geologic setting 313  
 black, hydrocarbon content 313  
 black, metal enrichment in 313  
 black, organic matter in 313  
 black, syngenetic, metal ores in 313
- SHERRY, H. S., Ion-exchange properties of the natural zeolite erionite 231
- SHIEH, Y-N. (with T. G. SUTER), Formation conditions of authigenic kaolinite and calcite in coals by stable isotope determination 154
- SHOVAL, S. (with S. YARIV), The interaction between Roundup (glyphosate) and montmorillonite. Part I. Infrared study of the sorption of glyphosate by montmorillonite 19
- SHOVAL, S. (with S. YARIV), The interaction between Roundup (glyphosate) and montmorillonite. Part II. Ion exchange and sorption of iso-propylammonium by montmorillonite 29
- Shrinkage  
 kinetically controlled rate, of kaolinite pellets 11  
 two-stage, of kaolinite pellets with heating 11
- SIFFERT, B. (with P. ESPINASSE), Acetamide and polyacrylamide adsorption onto clays: Influence of the exchangeable cation and the salinity of the medium 279
- Silicon  
 biogenic silica distribution, Pacific deep-sea sediments 185  
 source, Fe-montmorillonite, Pacific deep-sea sediments 185
- Silver  
 metal-membrane mount for XRD 152
- SIMONOT-GRANGE, M. H., Thermodynamic and structural features of water sorption in zeolites 423
- Single crystal X-ray diffraction  
 altered biotite grains, weathered granite 361
- Sludge  
 clay, stability of, from oil sands 301
- Smectite (see also Montmorillonite, Bentonite)  
 surface reaction with  $\text{VO}^{2+}$  and hectorite 91
- Soil  
 allophane in silt loams, New Zealand 261  
 biotite alteration in weathered granite, Australia 349, 361  
 book review, *Chemistry of Soil Constituents*, edited by D. J. Greenland and M. H. B. Hayes 309  
 book review, *Chronobibliographie, Signalétique et Analytique, des Sols à Allophane (Complément 1976; Errata et compléments 1950-1975)*, by J. Gautheyrou, M. Gautheyrou, and F. Colmet Daage 80  
 clay additions to constant standard, for quantitative mineral analysis 322  
 clay adsorption of methylene blue 87  
 clay amorphous material content 87  
 clay from Pennsylvania, cation-exchange behavior 87  
 clay quantitative mineral analysis by XRD 322  
 development on weathered granite, Australia 349  
 discussion of mathematical treatment of XRF data 305  
 exchangeable cations of Canadian 297  
 nonvolcanic Canadian, imogolite in 277  
 reply to discussion of mathematical treatment of XRF data 306  
 yeast RNA adsorption of allophanitic soils 261
- Solid solution  
 Fe and Al in goethite 368
- Solvent  
 affecting surface-cation interaction, importance 97
- Space group  
 of synthetic boehmite 81
- Spinel  
 -like phase, absence in dehydration product of kaolinite 11
- SPOSITO, GARRISON (with S. V. MATTIGOD), Ideal behavior in  $\text{Na}^+$ -trace metal cation exchange on Camp Berteau montmorillonite 125
- Stability (see also Hydrothermal stability)  
 field, hematite, goethite with [Al] and [OH] 195
- Standard constant  
 additions of soil clays to, in quantitative mineral analysis 322
- Statistical mechanics  
 derivation of cation-exchange equations, montmorillonite 417  
 treatment of selectivity variations, montmorillonite 417
- Stevensite  
 hydrothermal transformation to, from sepiolite 253  
 precipitation from hydrothermal solution 253  
 structural relationship to sepiolite 253
- Stilbite  
 DTA, TGA, XRD coupled analyses 423  
 structural changes 423  
 water adsorption isotherms 423

## Stratigraphy

La Tinta Formation, Buenos Aires Province, Argentina 433

Las Aguilas Formation, Buenos Aires Province, Argentina 433

## Structural charge

change due to iron reduction in illite/smectite mixed layer 327

in glauconite from Fe<sup>3+</sup>-Fe<sup>2+</sup> redox reactions 339

in illite/smectite mixed layer, Disturbed Belt, Montana 327

## Structure factors

synthetic boehmite 81

STUL, M. S. (with ANDRÉ MAES and ADRIEN CREMERS), Layer charge-cation-exchange capacity relationships in montmorillonite 387

STUL, M. S. (with J. B. UYTTERHOEVEN, J. DE BOCK, and P. L. HUYSKENS), The adsorption of n-aliphatic alcohols from dilute aqueous solutions on RNH<sub>3</sub>-montmorillonites. II. Interlamellar association of the adsorbate 377

SUBRAMANIAN, V., Quantitative analysis of elements in sediment and soils by X-ray fluorescence: A discussion 305

SUDDHIPRAKARN, ANCHALEE (with R. J. GILKES), Biotite alteration in deeply weathered granite: I. Morphological, mineralogical, and chemical properties 349

SUDDHIPRAKARN, ANCHALEE (with R. J. GILKES), Biotite alteration in deeply weathered granite: II. The oriented growth of secondary minerals 361

## Sudoite

nomenclature 238

## Surface area

of fired intercalates of hectorite, vermiculite, montmorillonite and phenanthroline compounds 201

of zirconyl-exchanged montmorillonite 119

of zirconyl-exchanged reduced-charge montmorillonite 119

## Surface charge

allophane, as a function of pH 261

**Surface reactions of parathion on clays**, by U. Mingelgrin and Sarina Saltzman 72

SUTER, T. G. (with Y.-N. SHIEH), Formation conditions of authigenic kaolinite and calcite in coals by stable isotope determination 154

## Synthesis

goethite, hematite from ferrihydrite 195

hectorite-, vermiculite-, montmorillonite-intercalation compounds with phenanthroline compounds 201

of Al-substituted hematite 105

of amorphous materials 87

of boehmite 81

of ferrihydrite in KOH solutions 105

of goethite, hematite from ferrihydrite, influence of organic anions on 402

of homoionic montmorillonite-nylon polymer complexes 129

of hydroxy-zirconium intercalates in montmorillonite 119

trimethylsilylation derivative of halloysite 53

**Synthesis and properties of heat-stable expanded smectite and vermiculite**, by R. H. Loeppert, Jr., M. M. Mortland, and T. J. Pinnavaia 201

**Synthesis of the trimethylsilylation derivative of halloysite**, by Kazuyuki Kuroda and Chuzo Kato 53

## T

## Tactoid

effect of, on adsorption of acetamide and polyacrylamide on Al-montmorillonite 279

effect on ion-exchange properties of montmorillonites 303

formation by hydroxy-aluminum precipitates in montmorillonite interlayer 303

## Talc

hydroxyl orientation 213

internal standard in quantitative clay analysis 175

-like domains in sepiolite 253

TALIBUDEEN, O. (with F. CABRERA), The release of aluminum from aluminosilicate minerals. II. Acid-base potentiometric titrations 113

Tar sand (see Oil sand)

Tartaric acid (see Hydroxy-carboxylic acid)

TAYLOR, D. H. (with A. T. WILSON), The adsorption of yeast RNA by allophane 261

TAYLOR, R. M. (with U. SCHWERTMANN, R. W. FITZPATRICK, and D. G. LEWIS), The influence of aluminum on iron oxides. Part II. Preparation and properties of Al-substituted hematites 105

TAZAKI, KAZUE, Scanning electron microscopic study of imogolite formation from plagioclase 209

TEMPAMINE<sup>+</sup>

adsorption and orientation of, on hectorite 97

electron spin resonance of, on hectorite 97

-exchanged hectorite, basal spacings 97

## Temperature

influence of, on formation of goethite, hematite from ferrihydrite 195

## Tetren (tetraethylene pentamine)

complexes with Cu and Ni on hectorite, nature of 269

TETTENHORST, R. T. (with G. G. CHRISTOPH, C. E. CORBATÓ, and D. A. HOFMANN), The crystal structure of boehmite 81

## Thermal gravimetric analysis (TGA)

coupled with DTA, XRD, zeolite analysis 423

heulandite, stilbite 423

- of homoionic montmorillonite-nylon polymer complexes 129
  - of kaolinite, comparison with thermal mechanical analysis data 11
  - Thermal mechanical analysis (see Dilatometry)
  - Thermal stability (see also Thermal treatment)
    - heulandite, stilbite, relation to water adsorption 423
    - heulandite, stilbite, structural changes 423
    - of dien and tetren complexes of Cu and Ni on hectorite 269
    - of phenanthroline intercalates with hectorite, vermiculite, montmorillonite 201
  - Thermal transformation of chrysotile studied by high resolution electron microscopy**, by Helena de Souza Santos and Keiji Yada 161
  - Thermal treatment (see also Thermal stability)
    - of chrysotile, studied by high resolution TEM and SAD 161
    - of homoionic montmorillonite-nylon polymer complexes 129
    - of phenanthroline intercalates of hectorite, vermiculite, and montmorillonite 201
    - of zirconyl-exchanged montmorillonite 119
    - of zirconyl-exchanged, reduced-charge montmorillonite 119
  - Thermodynamic and structural features of water sorption in zeolites**, by M. H. Simonot-Grange 423
  - Thermodynamics
    - of ideal cation exchange on Camp Berteau montmorillonite 125
    - of water sorption in zeolites 423
    - Vanselow selectivity coefficient 125
  - Thin-layer chromatography
    - of parathion degradation on clay surfaces 72
  - THOMAS, R. K. (with D. J. CEBULA, S. MIDDLETON, R. H. OTTEWILL, and J. W. WHITE), Neutron diffraction from clay-water systems 39
  - Titration
    - potentiometric, of edge sites of K-saturated kaolinite in non-aqueous solvents 57
  - Titration of pH-dependent sites of kaolinite in water and selected non-aqueous solvents**, by R. H. Loeppert, Jr., L. W. Zelazny, and B. G. Volk 57
  - Topotactic relation
    - of forsterite and chrysotile by SAD 161
    - of forsterite and enstatite, from heated chrysotile 161
    - of forsterite, from heated chrysotile 161
  - TOURTELOT, H. A., Black shale—its deposition and diagenesis 313
  - Trace metals
    - Na<sup>+</sup> cation exchange on montmorillonite 125
  - Transmission electron microscopy (TEM)
    - altered biotite from weathered granite, Australia 349, 361
    - hectorite, Hector, California 293
    - hematite from ferrihydrite in presence of organic anions 402
    - high resolution, of thermally treated chrysotile and decomposition products 161
    - imogolite, nonvolcanic soils of Canada 297
    - kaolinite, halloysite, pyrophyllite, Las Aguilas Formation, Argentina 433
    - modified freeze-drying procedure for 293
    - of Al-substituted hematite 105
    - of heat-treated hectorite-phenanthroline intercalate 201
    - of imogolite on weathered plagioclase 209
    - of Li-montmorillonite sol in water 39
    - sepiolite, Aschenbrenner deposit, Nevada 253
    - stevensite, from hydrothermal transformation of sepiolite 253
  - Trimethylsilylation derivative
    - of halloysite, DTA, IR, XRD 53
    - of halloysite, synthesis 53
  - TUNCER, E. R. (with T. DEMIREL and R. A. LOHNES), Quantitative analysis of elements in sediments and soils by X-ray fluorescence: A reply 306
- U
- Ultraviolet-visible spectroscopy
    - of benzidine-hectorite complexes 224
  - Unit cell
    - dimensions amesite, Antarctica, refined 241
    - of boehmite, refinement 81
  - UYTTERHOEVEN, J. B. (with M. S. STUL, J. DE BOCK, and P. L. HUYSKENS), The adsorption of n-aliphatic alcohols from dilute aqueous solutions on RNH<sub>3</sub>-montmorillonites. II. Interlamellar association of the adsorbate 377
  - UYTTERHOEVEN, J. B. (with R. A. SCHOONHEYDT, FIRMIN VELGHE, and RITA BAERTS), Complexes of diethylenetriamine (dien) and tetraethylenepentamine (tetren) with Cu(II) and Ni(II) on hectorite 269
- V
- Vanadium
    - as VO<sup>2+</sup>, mobility of, on hectorite 91
    - as VO<sup>2+</sup>, reactions of, on hectorite 91
    - formation of VO(OH)<sup>2</sup> on hectorite 91
    - retention and mobility on hectorite 91
  - Vanadyl ion
    - ESR, on hydrated hectorite 91
    - rotational mobility of, on hydrated hectorite 91
  - VELGHE, FIRMIN (with R. A. SCHOONHEYDT, RITA BAERTS, and J. B. UYTTERHOEVEN), Complexes of diethylenetriamine (dien) and tetraethylenepentamine (tetren) with Cu(II) and Ni(II) on hectorite 269

## Venezuela

Al-goethite in laterite from 368

## Vermiculite

distinction from montmorillonite by methylene blue cation-exchange behavior 87

in altered biotite from weathered granite, Australia 361

intercalate with phenanthroline compounds, thermal stability, surface area 201

montmorillonite, quantitative mineral analysis by XRD 322

Transvaal, South Africa, CEC 87

VILLALBA, R. (with E. MENDELOVICI and SH. YARIV), Aluminum-bearing goethite in Venezuelan laterites 368

VO<sup>2+</sup> (see Vanadyl ion)

## Volcanic ash (glass)

abundance in Pacific deep-sea sediments, Mn-nodule belt 185

alteration of bubble-wall shards to montmorillonite 291

altered, SEM 291

imogolite in nonvolcanic soils 297

possible source of imogolite in Canadian soils 297

source of allophane, New Zealand 261

weathered plagioclase in, formation of imogolite 209

VOLK, B. G. (with R. H. LOEPPERT, JR. and L. W. ZELAZNY), Titration of pH-dependent sites of kaolinite in water and selected non-aqueous solvents 57

## W

WARD, J. B. (with D. M. MCCONCHIE, V. H. MCCANN, and D. W. LEWIS), A Mössbauer investigation of glauconite and its geological significance 339

## Water

molecule orientation in montmorillonite by neutron diffraction 39

neutron quasielectric scattering of, in clays 39

vapor adsorption isotherms of mixed Na/Ca montmorillonite 145

vapor adsorption isotherms, use of BET theory in analysis of 145

**Water vapor isotherms and heat of immersion of Na/Ca-montmorillonite systems. II. Mixed systems**, by R. Keren and I. Shainberg 145

## Weathering

biotite alteration in weathered granite, Australia 349, 361

of plagioclase, imogolite formation by 209

WHITE, J. W. (with D. J. CEBULA, R. K. THOMAS, S. MIDDLETON, and R. H. OTTEWILL), Neutron diffraction from clay-water systems 39

WILSON, A. T. (with D. H. TAYLOR), The adsorption of yeast RNA by allophane 261

## Wyoming bentonite

Na-exchanged, chemical analysis, Volclay 119

neutron diffraction 39

of parathion degradation 72

sorption of glyphosate and glycine 19

## X

X-ray diffraction (see X-ray powder diffraction)

## X-ray fluorescence analysis (XRF)

discussion of mathematical treatment of data 305

New Zealand glauconites 339

reply to discussion of mathematical treatment of data 306

shifts as a measure of bonding energy charges in kaolinite 11

shifts in kaolinite with temperature 11

## X-ray photoelectron spectroscopy (XPS)

exchange-cation content by 248

selective surface-uptake analysis by 248

## X-ray powder diffraction (XRD)

basal spacings of dien and tetren complexes of Cu and Ni on hectorite 269

bentonite, Sardinia 429

biotite, weathered granite, Australia 349, 361  
clay deposits, Las Aguilas Formation, Argentina 433

coupled with DTA, TGA, zeolite analysis 423

crystallinity index by, New Zealand glauconites 339

data compared with neutron diffraction data 39

depth variation of (060) from altered biotite 349

estimate of Al content of goethite 195

illite/smectite mixed layer in bentonites, Montana 327

in heating cell, heulandite, stilbite 423

method for quantitative clay analysis 175

of acid-treated trimethylsilylation derivative of halloysite 53

of Al-substituted hematite 105

of alcohol adsorbed, alkylammonium-exchanged montmorillonite 377

of boehmite, calculated d values 81

of boehmite, measured d values 81

of kaolinite after heating 11

of pelleted kaolinite, intensity data 11

of weathered plagioclase grains from volcanic ash 209

Pacific deep-sea clays 175

pattern of halloysite and trimethylsilylation derivative 53

quantitative mineral analysis of soil clays by 322  
sepiolite, after hydrothermal treatment 253  
silver membrane mount for 152

## Xanthophyllite

hydroxyl orientation 213

## Y

YADA, KEIJI (with HELENA DE SOUZA SANTOS), Thermal transformation of chrysotile studied by high resolution electron microscopy 161

YAMANAKA, S. (with G. W. BRINDLEY), High surface area solids obtained by reaction of montmorillonite with zirconyl chloride 119

YARIV, S. (with E. MENDELOVICI and R. VILLALBA), Aluminum-bearing goethite in Venezuelan laterites 368

YARIV, S. (with S. SHOVAL), The interaction between Roundup (glyphosate) and montmorillonite. Part I. Infrared study of the sorption of glyphosate by montmorillonite 19

YARIV, S. (with S. SHOVAL), The interaction between Roundup (glyphosate) and montmorillonite. Part II. Ion exchange and sorption of iso-propylammonium by montmorillonite 29

## Yeast RNA

adsorption by allophane 261

adsorption by allophane, effect of salt solution 261

YEH, H-W. (with J. R. HEIN and ELAINE ALEXANDER), Origin of iron-rich montmorillonite from the manganese nodule belt of the North Equatorial Pacific 185

## Z

ZALBA, P. E., Clay deposits of Las Aguilas Formation, Barker, Buenos Aires Province, Argentina, 433

ZELAZNY, L. W. (with R. H. LOEPPERT, JR. and B. G. VOLK), Titration of pH-dependent sites of kaolinite in water and selected non-aqueous solvents 57

## Zeolite

anhydrous composition of erionite, Jersey Valley, Nevada 231

announcement, 5th International Conference on Zeolites 311

book review, *Natural Zeolites: Occurrence, Properties, Use*, edited by L. B. Sand and F. A. Mumpton 309

cation-exchange properties of erionite, Jersey Valley, Nevada 231

structural changes and relation to water adsorption 423

water adsorption isotherms, heulandite, stilbite 423

XRD, TGA, DTA, coupled analysis 423

## Zinnwaldite

hydroxyl orientation 213

## Zirconium

hydroxy-zirconium complex 119

zirconyl chloride-exchanged montmorillonite 119

## Zwitterion

glycinium cation, adsorption on montmorillonite 19