

## PAPERS PRESENTED—1988 ANNUAL MEETING OF THE CLAY MINERALS SOCIETY

The following papers were presented at the 25th annual meeting of The Clay Minerals Society in Grand Rapids, Michigan, September 19-21, 1988. The complete Program and Abstracts booklet of the meeting is available from The Clay Minerals Society, Society Office, P.O. Box 2295, Bloomington, Indiana 47402, U.S.A., for a nominal fee.

### Plenary Lectures

CLAY MINERAL ORIGIN IN SOILS—1988 GEORGE W. BRINDLEY LECTURE—M. L. Jackson

CLAY-ORGANIC INTERACTIONS—PAST, PRESENT, AND FUTURE—M. M. Mortland

SHAPE-SELECTIVE SORBENTS BASED ON CLAY MINERALS—R. M. Barrer

### Pillared Clays and Clay Catalysts

STRUCTURAL ORDER AND ORIENTATION OF ORGANOMETALLIC PILLARS ON SYNTHETIC FLUORHECTORITE AND MONTMORILLONITE SURFACES—Faina Tsvetkov and J. W. White

LAYER RIGIDITY IN MIXED-ION VERMICULITE CLAY—S. A. Solin, Soonil Lee, P. Zhou, W. Jin, S. D. Mahanti, H. Kim, and T. J. Pinnavaia

POLYNUCLEAR HYDROXY-ALUMINUM INTERCALATION OF MONTMORILLONITE AND THE FORMATION OF 18.8- AND 28-Å PILLARED STRUCTURES—S. S. Singh and H. Kodama

PILLARED CLAYS AS CATALYSTS IN SIMULATED COALIFICATION—K. A. Carrado, R. E. Botto, R. E. Winans, and A. R. Thompson

LABORATORY EVALUATION OF CLAYS IN THE TREATMENT OF BTX FEEDSTOCKS—L. T. Novak and K. F. Petraitis

DESICCATION PROPERTIES OF PILLARED CLAYS—P. B. Malla, S. Komarneni, and S. Yamanaka

DIMETHYL ETHER AND METHANOL REACTIONS OVER METAL-OXIDE PILLARED CLAYS—S. D. Landau, James Hinnenkamp, and J. A. Scheben

REACTIVITY OF CLAY VOLATILES—L. Heller-Kallai, I. Miloslavski, and R. C. Mackenzie

ASPECTS OF THE CHEMISTRY OF ORGANIC AND INORGANIC PILLARS IN CLAYS—W. Jones

### Surface Chemistry

CRYSTALLINE AND NONCRYSTALLINE ORGANIC INTERCALATES OF THE 8.4-Å SYNTHETIC KAOLINITE HYDRATE—P. M. Costanzo and R. F. Giese, Jr.

CATALYTIC FACTORS IN KAOLINITES—SPECTROSCOPIC INDICATIONS OF INTERDEPENDENCE—L. M. Coyne, P. M. Costanzo, and B. K. G. Theng

SILYLATION-HYDROLYSIS REACTIONS OF IMOGOLITE: A TUBULAR ALUMINOSILICATE POLYMER—L. M. Johnson and T. J. Pinnavaia

SURFACE-SELECTIVE DISPERSION OF  $Os_3(CO)_{12}$  ON CLAYS: DEPENDENCE OF CLAY COLLOID PROPERTIES—E. M. Giannelis and T. J. Pinnavaia

DIHYDROXYBENZENE OXIDATION AT Mn(III,IV) OXIDE SURFACES—M. B. McBride

PYROGALLOL TRANSFORMATION AS CATALYZED BY NONTRONITE, BENTONITE, AND KAOLINITE—M.-C. Wang and P. M. Huang

FLUORESCENCE PROPERTIES OF DYE-CLAY COMPOSITES—Tadashi Endo, Tsugio Sato, and Masahiki Shimada

ADSORPTION OF FLUORESCENT COMPOUNDS ON REDUCED-CHARGE HECTORITES—W. F. Jaynes and S. J. Traina

THE CLAY-WATER SYSTEM: SPECTROSCOPIC STUDIES WITH METHYLENE BLUE AND PROFLAVIN—J. Cenes and R. A. Schoonheydt

### Fundamental Physics and Chemistry

PROPERTIES OF WATER ADSORBED BY MONTMORILLONITE FROM THE LIQUID AND VAPOR STATES—M. Fu, Z. Z. Zhang, and P. F. Low

MORPHOLOGIC CONTROL OF HALLOYSITE DEHYDROXYLATION—S. L. Wiet, A. F. Koster van Groos, and Stephen Guggenheim

REVISITING KAOLINITE DEHYDROXYLATION: A  $^{29}Si$  AND  $^{27}Al$  MAS-NMR STUDY—J. F. Lambert, W. S. Millman, and J. J. Fripiat

INTERLAYER WATER LOSS IN A HIGH-PRESSURE MICA-LIKE PHASE—Anna Kokines, Stephen Guggenheim, A. F. Koster van Groos, and C. B. Sclar

EXPANSION CHARACTERISTICS OF SOME HIGH-CHARGE EXPANDING MINERALS AT VARIOUS RELATIVE HUMIDITIES—A. C. Olis, R. K. Shaw, and L. A. Douglas

CORRECTION FOR LAYER-CHARGE CALCULATION BY ALKYL-AMMONIUM IN HIGH-CHARGE CLAY MINERALS—A. R. Mermut, S. K. Ghabru, and R. J. St. Arnaud

CATION EXCHANGE ON LAYER SILICATES AS STUDIED BY  $^{133}Cs$  NMR SPECTROSCOPY—C. A. Weiss, Jr. and R. J. Kirkpatrick

STACKING SEQUENCES OF MIXED-LAYER ILLITE/SMECTITE: HIGH-RESOLUTION TRANSMISSION ELECTRON MICROSCOPIC IMAGING—J. J. Ahn, P. R. Buseck, and R. C. Reynolds

TRANSMISSION ELECTRON MICROSCOPY OBSERVATIONS OF POLYTYPOISM IN ILLITE—S. M. Baxter and D. R. Peacor

ELECTROSTATIC POTENTIAL WITHIN AND ADJACENT TO PHYLLOSILICATE LAYERS—W. F. Bleam

LATTICE DYNAMICAL STUDY OF A MODEL CLAY—J. M. Gales and S. D. Mahanti

INELASTIC NEUTRON SCATTERING STUDIES OF THE DYNAMICS OF PILLARED MONTMORILLONITE—D. A. Neumann, J. M. Nicol, J. J. Rush, and N. Wada

INELASTIC NEUTRON SCATTERING STUDY OF THE VIBRATIONS OF HYDROGENATED AND DEUTERATED TRIMETHYLAMMONIUM VERMICULITE CLAYS—Yibing Fan, S. A. Solin, H. Kim, T. J. Pinnavaia, and D. A. Neumann

FAR-INFRARED SPECTROSCOPY OF POTASSIUM-INTERLAYERED PHYLLOSILICATES—P. A. Schroeder

FAR-INFRARED STUDY OF POTASSIUM IN MICA—R. Prost and V. Laperche

TORSIONAL MODE STUDY OF MIXED-ION VERMICULITE CLAYS—Soonil Lee and S. A. Solin

RIETVELD REFINEMENT OF THE CRYSTAL STRUCTURE OF KAOLINITE—D. L. Bish and Robert Von Dreele

VIBRATIONAL PROBE STUDIES OF THE KAOLINITE SURFACE USING HYDRAZINE—C. T. Johnson

#### Hydroxy-Interlayered Clays and Soil Clays

HYDROXY-ALUMINOSILICATE INTERLAYERING IN MONTMORILLONITE—G. Lou and P. M. Huang

HYDROXY-COBALT INTERLAYERING IN MONTMORILLONITE BY THE TITRATION METHOD—W. W. Gould, Sridhar Komarneni, and Shoji Yamanaka

REACTIONS OF HYDROXY-ALUMINUM POLYMERS WITH SMECTITES AND VERMICULITES—P. H. Hsu

CHLORITIZED VERMICULITE IN A RED-YELLOW SOIL OBSERVED BY ULTRAMICROMETRY AND HIGH-RESOLUTION ELECTRON MICROSCOPY—Koji Wada and Yasuko Kakuto

OCCURRENCE OF Al-RICH SOILS, ELEUTHRA, BAHAMAS—A. M. Foos

USE OF NEAR INFRARED CORRELATION SPECTROSCOPY FOR QUANTITATION OF SURFACE IRON, ADSORBED WATER, AND STORED ELECTRONIC ENERGY IN A SUITE OF MARS SOIL-ANALOG MATERIALS—L. M. Coyne, Amos Banin, Glenn Carle, James Orenberg, and Thomas Scattergood

INTERLAYER SWELLING AND CHARGE CHARACTERISTICS OF PHYLLOSILICATE CLAYS IN SOILS OF AN ALLUVIAL PLAIN IN MOROCCO—M. Badraoui, R. Bouabid, and P. R. Bloom

EFFECT OF PERCENTAGE OF CLAY AND CLAY MINERALOGY ON WATER MOVEMENT IN COARSE-TEXTURED SOIL—M. Gal and L. D. Whittig

SOIL STABILIZATION WITH LIME AND FLY ASH—R. E. Ferrell, Jr., Ara Arman, and Gokhan Baykal

#### Mineralogy and Diagenesis

OSTWALD RIPENING BY CLAY MINERALS—D. D. Eberl

CONTROLS ON ORDERING OF MIXED-LAYER ILLITE/SMECTITE: AN EXPERIMENTAL STUDY—W.-L. Huang

MATHEMATICAL MODELING OF THE SMECTITE-TO-ILLITE TRANSFORMATION IN THE DENVER AND SOUTHERN APPALACHIAN BASINS—W. C. Elliot, Gerald Matisoff, and J. L. Aronson

RECOGNITION OF VERY THIN, MIXED-LAYER CLAY (ILLITE/SMECTITE) INTERVALS IN LOWER PALEOZOIC ROCKS SEQUENCES BY PYROCLASTIC MINERAL EUHEDRA—J. E. Conkin, M. R. Dasari, and D. C. Hutchison

RANDOM MIXED-LAYER CHLORITE/SMECTITE: DOES IT EXIST?—H. E. Roberson

GLAUCONITE DIAGENESIS AS RELATED TO CHANGES IN PALEODEPTH—R. G. Beauchamp, L. L. Y. Chang, and H. G. Siegrist, Jr.

DIAGANESIS OF SMECTITE IN AN ACCRETIONARY COMPLEX: IMPLICATIONS FOR THE HYDROLOGY AND DYNAMICS OF THE SUBDUCTION PROCESS—J. S. Tribble

CLAY MINERALOGY OF COAL AND ASSOCIATED SHALE FROM THE ANTHRACITE REGION, PENNSYLVANIA: EVIDENCE FOR HYDROTHERMAL FLUID CIRCULATION—E. J. Daniels and S. P. Altaner

GLAUCONITE DIAGENESIS IN THE PUMPKIN VALLEY SHALE AND WILCOX FORMATION—P. M. Baxter, M. E. Strickler, and R. E. Ferrell, Jr.

MINERALOGY OF VERTICAL WEATHERING PROFILES AND FRACTURE ZONES OF ASHTABULA TILL IN NORTHEAST OHIO—P. W. Bruno and A. M. Foos

BURIAL DIAGENESIS IN TWO NONMARINE TERTIARY BASINS, SOUTHWESTERN MONTANA—Gray Thompson and Dougal McCarty

HYDROTHERMAL SYNTHESIS OF KAOLINITE: EFFECT OF DICKITE ADDITION—S. Tomura, Y. Shibasaki, R. Miyawaki, and H. Mizuta

ORIGIN OF KAOLINITE IN THE WHITEMUD FORMATION, SOUTHERN SASKATCHEWAN—R. J. Pruett and H. H. Murray

ORGANIC MATURATION AND CLAY DIAGENESIS IN THE PERMIAN BASIN—C. R. Landis, Necip Güven, and W. L. Borst

ROCK WEATHERING AND CLAY MINERAL FORMATION IN SOUTHEASTERN ALASKA—PRELIMINARY RESULTS—C. V. Clemency and G. W. Hermance

RESISTIVITIES OF ZEOLITE, SMECTITE, AND ILLITE DISPERSED SYSTEMS IN A SIMULATED PAY SAND—W. R. Reynolds and C. W. Williford

CLAY MINERALS OF CRETACEOUS SHALES OF THE CASSIPORE GRABEN, OFFSHORE AMAZON MOUTH BASIN (NORTHERN BRAZIL)—Daisy Barbosa Alves

#### Environmental and Materials Applications

USE OF MODIFIED CLAY ADSORBENTS FOR THE REMOVAL OF PRIORITY POLLUTANTS FROM INDUSTRIAL WASTEWATERS—K. R. Srinivasan and H. S. Fogler

RETENTION OF ORGANIC CONTAMINANTS BY SOILS AND CLAYS EXCHANGED WITH ORGANIC CATIONS—S. A. Boyd

MODIFIED CLAYS FOR THE ADSORPTION AND CATALYTIC DESTRUCTION OF ENVIRONMENTAL TOXICANTS—R. C. Zielke, M. Rameswaran, and T. J. Pinnavaia

HYDROPHOBICITY OF CLAY SURFACES: SORPTION OF VOLATILE, NON-POLAR ORGANIC COMPOUNDS—B. L. Sawhney

ZEOLITE AMMONIA REMOVAL FROM CATFISH POND WATER—M. Quiros, C. W. Williford, and W. R. Reynolds

MINERAL-BASED FILLERS FOR THERMOPLASTICS—J. M. Adams, P. M. McGenity, and C. D. Paynter

EPOXY COMPOSITES FORMED FROM 2:1 LAYER SILICATES—Muh Wang and T. J. Pinnavaia

STUDIES ON THE DISPERSION OF CLAY PLATELETS IN CLAY-EPOXY COMPOSITES BY SMALL-ANGLE NEUTRON SCATTERING—A. Moini, M. S. Wang, D. A. Neumann, and T. J. Pinnavaia

CERAMIC POTENTIAL OF ALBERTA ROCKS—Don Scafe

#### General Topics

STABILITY OF HYDROXY-ALUMINUM POLYCATION-TREATED ILLITE AND MONTMORILLONITE SUSPENSIONS—H. E. Doner and Baohua Gu

SYNTHESIS AND ELECTRON SPIN RESONANCE STUDIES OF COPPER-DOPED ALUMINA-PILLARED MONTMORILLONITE CLAY—R. K. Kukkadapu and Larry Kevin

TEM STUDY OF KAOLINITIZED MUSCOVITE—W.-T. Jiang and D. R. Peacor

PITFALLS IN PROFILE REFINEMENT OF CLAY MINERAL DIFFRACTION PATTERNS—S. J. Chipera and D. L. Bish

THE HINCKLEY INDEX DOES NOT MEASURE THE 'CRYSTALLINITY' OF KAOLINITES—Alain Plançon and R. F. Giese, Jr.

INFLUENCE OF SULFATE ON THE FORMATION OF Mn-SUBSTITUTED GOETHITES—M. H. Ebinger and D. G. Schulze

ESTIMATING THE THERMODYNAMIC PROPERTIES OF CLAY MINERALS AT 298 K FROM THE SUM OF POLYHEDRAL CONTRIBUTIONS—J. A. Chermak and J. D. Rimstidt

STRUCTURAL CHANGES DURING THE TRANSFORMATION OF BIRNESSITE TO BUSERITE AND TODOROKITE—D. C. Golden, H. Sittertz-Bhatkar, and J. B. Dixon

COORDINATION COMPLEXES OF *p*-HYDROXYBENZOATE ON Fe OXIDES—K.-H. Kung and M. B. McBride

HIGH-PERFORMANCE CERAMICS AND MOLECULAR COMPOSITES FROM ORGANOCCLAYS—Vivek Mehrotra and E. P. Giannelis

OPTICAL AND TRANSMISSION ELECTRON MICROSCOPIC INVESTIGATIONS OF CLAY MINERALS AND OTHER MATERIALS IN BUILDING INSULATION AND FINISH PRODUCTS—Thomas Kremer, T. J. Hopen, and J. R. Millette

BINDING OF CHLORINATED DIOXINS AND BIPHENYLS FROM AQUEOUS SOLUTION TO CLAYS AND

HYDROXY-ALUMINUM POLYMERS—Tim Nolan, K. R. Srinivasan, and H. S. Fogler

DISTINCTION BETWEEN CRYSTALLINE AND NON-CRYSTALLINE PORTIONS OF GROUND KAOLINITES BY SOLID STATE <sup>27</sup>Al AND <sup>29</sup>Si MAS-NMR, XRD, IR, AND CHEMICAL DISSOLUTION ANALYSES—H. Kodama, L. S. Kotlyar, and J. A. Ripmeester

FURTHER STUDIES ON THE ORIGIN, IDENTIFICATION, AND QUANTIFICATION OF ILLITE POLYTYPES—R. E. Hughes, D. M. Moore, G. S. Austin, and H. D. Glass

OCCURRENCE AND PROPERTIES OF SVEITE IN THE NORTHEASTERN SAN JOAQUIN VALLEY, CALIFORNIA—R. C. Graham, J. O. Ervin, and W. M. Graham

CLAY MINERALOGY AND ILLITE CRYSTALLINITY IN AN ALTERATION ZONE ABOVE A HYDROTHERMAL URANIUM DEPOSIT, CIGAR LAKE, SASKATCHEWAN, CANADA—J. B. Percival, J. K. Torrance, and K. Bell

GROUND-WATER MIXING MODEL FOR THE FORMATION OF THE INDIANA HALLOYSITE AT THE GARNER MINE, BEDFORD, INDIANA—Thomas Dombrowski, R. S. Merkl, R. J. Pruett, Thomas Toth, Jun Yuan, and H. H. Murray

CLAY MINERALS IN UNDERCLAYS AND OTHER KAOLINITIC MUDROCKS OF THE SAGINAW FORMATION AND EATON SANDSTONE (PENNSYLVANIAN GRAND RIVER GROUP), GRAND LEDGE, MICHIGAN—M. A. Velbel and John Genuise

CLAY MINERALOGY AND DIAGENETIC EVOLUTION OF DEEPLY BURIED ROCKS OF THE SIMPSON GROUP (MIDDLE ORDOVICIAN), ANADARKO BASIN, OKLAHOMA—R. M. Pollastro

CLAY MINERAL DIAGENESIS IN THE MORRISON FORMATION, SAN JUAN BASIN, NEW MEXICO: LITHOLOGIC CONTROLS—L. J. Crossey

CLAY MINERALOGY OF THE ROCKMART SLATE: EVIDENCE FOR PRE-ALLEGHENIAN METAMORPHISM IN THE VALLEY AND RIDGE PROVINCE, POLK COUNTY, GEORGIA—J. F. Renner and V. J. Hurst

A TEM-AEM STUDY OF CHLORITIC MINERALS AND CORRENSITE IN METABASALT FROM NORTHERN TAIWAN—Y.-H. Shau, D. R. Peacor, and E. J. Essene

EVIDENCE FOR AN EPHEMERAL LAKE ORIGIN OF PLYGORSKITE DURING THE MIOCENE IN CENTRAL FLORIDA—R. N. Strom

EXPANDABLE SEPIOLITE FROM NINTYEAST RIDGE, INDIAN OCEAN—Scott Argast and H. E. Roberson

SOME MARYLAND SOILS WITH SIMILAR CLAY MINERALOGY BUT WITH MARKED DIFFERENCES RELATED TO THEIR MODE OF GENESIS—D. S. Fanning, M. C. Rabenhorst, M. E. El-Desoky, and O. Offitah

LAUMONTITE IN SOILS OF THE SAN GABRIEL MOUNTAINS, CALIFORNIA—Kelly Taylor, R. C. Graham, and J. O. Ervin

CLAY MINERALS IN BANGLADESH—M. Khalequzzaman

APPLICATION OF TOTAL-PATTERN PROFILE REFINEMENT FOR THE IDENTIFICATION OF THOSE PHASES MOST RESPONSIBLE FOR PHOSPHORUS SORPTION—R. C. Jones

CORRELATION OF THE UPPER ORDOVICIAN DEICKE  
K-BENTONITE BED FROM THE UPPER MISSISSIPPI  
VALLEY TO THE ST. LAWRENCE VALLEY, CANADA—  
W. D. Huff, D. R. Kolata, J. K. Frost, and R. A. Trevail

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Jr.

Reference to abstracts of papers presented at this meeting should be made as follows:

Author(s) (1988) Paper title: in *Program and Abstracts, 25th Annual Meeting, The Clay Minerals Society, Grand Rapids, Michigan, 1988*, 000–000.