WELCOME

THE 55TH ANNUAL MEETING OF THE CLAY MINERALS SOCIETY, HELD JUNE 11–14, 2018, AT THE UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN, ILLINOIS, USA

The Clay Mineral Society (CMS) began in 1952 as the Interdivisional Committee on Clay Minerals of the National Academy of Sciences-National Research Council. By 1962, the Clay Mineral Society was established as own its society. The primary purpose of CMS is to stimulate research and education and to disseminate information relating to all aspects of clay science and technology. Through its conference and publications (*Clays and Clay Minerals* and *CMS Workshop Lectures Series*) the society provides numerous opportunities for the information exchange and interdisciplinary research collaborations. The society welcomes colleagues from all branches of clay sciences and from many countries in the world to the CMS conferences and to our society journal, *Clays and Clay Minerals,* to disseminate their valuable work.

The program of the 55th annual meeting of The Clay Minerals Society (Theme: *New Visons of Clay Science*) consists of a workshop on Medicinal Applications of Clay Minerals organized by Professor Jin-ho Choy, EWHA Womans University, Korea and four days of technical sessions. Each technical session starts with an Award Lecture (Jackson Award recipient Stephen Hillier, Bailey Award recipient Jock Churchman, Brindley Award recipient Cliff Johnston, and Pioneer Award recipient Jan Środoń) that will be followed by thematic sessions. Nineteen thematic sessions that cover a broad range of clay sciences: clay mineralogy, crystallography, petrology, material science, nanosciencee, bio-nanoclays in medicine, environmental engineering, soil science, biogeochemistry, industrial technology, isotope geochemistry, cosmogeochemistry, advanced spectroscopies, and education have attracted 240 abstracts. The Reynolds Cup competition award, NSF and CMS student travel grant awards, and students' best presentation awards will also be presented. Several field trips (Starved Rock and Matthiessen State Parks, Kaolinite in the Keokuk Geodes, Critical Zone Observatory, Fithian Illite, and Morrow Plots) and the social programs (Amish Tour, Arthur, Illinois; Abraham Lincoln Sites, Springfield, Illinois) are also offered to accommodate the participants' interest in the clay science, culture, and history in the State of Illinois. Enjoy the meeting at the University of Illinois at Urbana-Champaign. We hope that your interaction with international colleagues and students will further enhance research and education in clay sciences.

Yuji Arai
General Chairman of the 55th Annual Meeting of The Clay Minerals Society

PROGRAM AT-A-GLANCE

	Day 1	Day 2			Day 3		Day 4					
	Friday	Saturday			Sunday		Monday					
Time/ Room	210	314	314/210	210	S. Lounge	Field Trips	Social Program	Illini A	Illini B	Illini C	210	Pine
8:00		Council Meeting	Breaks	Work-shop		(1) Starved Rock (2) Keokuk Geode	Amish Country Tour	Welcome + Special Award + Jackson Award Lecture				
8:10												
8:20												
8:30												
9:05												
9:20												
9:40												Break
10:00								Abiotic	IR	Bio-nano	General	Posters
10:20												
10:40												
11:00												
11:20												
11:40												
12:00								Lunch On Your Own (Sustaining Members' Luncheon Room 314)				
1:00												
1:20								Abiotic	IR	Bio-nano	General	Posters
1:40												
2:00												
2:20												
2:40												
3:00												
3:20												Break
3:40								Abiotic	IR	Bio-nano	Critical Zone	Posters
4:00												
4:20								Illite I				
4:40												
5:00												
5:20												
5:40		Informal BBQ at Stucki's home. Bus leaves front of Illini Union at 5:30 PM.			Welcome Recep-tion & Student Welcome		Editorial Board Dinner at Biaggis—Bus leaves the front of the Illini Union at 5:45 pm					Authors Present: Poster Session and Recep-tion
6:00	Exec. Comm. Meeting and Dinner											
6:20												
6:40												
7:00												
7:20												
7:40												
8:00												
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9:40												

STRUCTURAL FEATURES OF MONTMORILLONITES FROM RUSSIAN DEPOSITS AND THEIR INFLUENCE ON SORPTION CHARACTERISTICS TOWARDS RADIONUCLIDES ^{90}SR, ^{137}CS, ^{233}U, ^{241}AM

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Bentonite clays and bentonite-based materials are well known for their adsorption properties and low permeability. They are widely used in the disposal of various industrial wastes, including radioactive. The main component of bentonite clays is a montmorillonite which belongs to the smectite group. Its characteristic feature are intercrystalline swelling, large specific surface area and high cation exchange capacity.

Samples for this research were taken from four deposits: Taganskoye (Kazakhstan), Dashkovskoe (Moscow region), Zyryanskoe (Kurgan) and 10th Khutor (Khakassia). The following methods were used to study the composition of bentonite samples and the structure of montmorillonites: PQXRD (Rietveld) for mineral composition, XRD analysis of oriented clay mounts for refinement of the structure of montmorillonites (Na, Ca, Li—exchanged samples were analyzed in air-dry and glycolated states), FTIR for raw material and <0.5 μm fractions and also DSC-DTG-TG coupled thermal analysis. For the analysis of surface and sorption properties several approaches were used: S_{BET} definition, volume and average pore diameter, CEC determination (MB and Cu $[(Trien)]^{2+}$) the maximum adsorption values (A_{max}) towards Cs and Sr, total exchange capacity determination towards ^{90}Sr, ^{137}Cs and sorption capacity and distribution coefficient (Kd) towards ^{90}Sr, ^{137}Cs, ^{233}U, ^{241}Am. Selective desorption (sequential leaching) revealed the forms radionuclides' bonding to bentonite.

As a result of the study, structural features determining the sorption properties towards various pollutants including radionuclides were revealed.

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