岩土力学与工程前沿讲坛

Forum on Geomechanics and Geo-engineering

No.SKL*2020-15*

应岩土力学与工程国家重点实验室邀请，美国麻省大学阿姆赫斯特分校张国平教授开设线上系列学术讲座，信息如下：

报告人 Lecturer	**张国平 教授**
报告题目 Theme	**工程粘土矿物学（中文 20 讲）**
报告时间 Time	**2020 年 12 月 1 日至 2021 年 1 月 14 日**
报告地点 Spot	腾讯会议平台（无密码登陆）

欢迎广大科研人员及研究生参加！

岩土力学与工程前沿讲坛

Forum on Geomechanics and Geo-engineering

报告人介绍

Guoping Zhang is currently a professor in the Department of Civil & Environmental Engineering at the University of Massachusetts Amherst. He obtained a PhD in Geotechnical Engineering with a minor degree in Materials Science and Engineering from MIT in 2002. His research is centered on clay-based and clay-derived materials, including clay minerals, clay-biopolymer aggregates and flocs, shales, geopolymers, and superhydrophobic materials, as well as their property (mainly mechanical) characterization and applications, with funding from a variety of federal, state, and industrial sponsors.

讲座内容与安排

第 **1** 讲 (12 月 1 日，上午 9:00-11:00，腾讯会议号：79693419965):

Introduction

Course syllabus & conduct

Origin and importance of this course

Motivation

第 **2** 讲 (12 月 3 日，晚上 20:30-22:30，腾讯会议号：54947181356):

Clay mineralogy: definition, classification, and examples

Definition, basic concepts

Occurrence and formation

第 **3** 讲 (12 月 4 日，上午 9:00-11:00，腾讯会议号：95325695070)**:**

Clay mineralogy: definition, classification, and examples

Occurrence and formation

Classification

第 **4** 讲 (12 月 8 日，上午 9:00-11:00，腾讯会议号：79693419965)**:**

Clay mineralogy: definition, classification, and examples

Size and micromorphology

Crystal structure, composition, defect and disorder

第 **5** 讲 (12 月 10 日，晚上 20:30-22:30，腾讯会议号：54947181356):

Clay mineralogy: definition, classification, and examples

Crystal structure, composition, defect and disorder

Common and special clay minerals

第 **6** 讲 (12 月 11 日，上午 9:00-11:00，腾讯会议号：95325695070):

Identification, quantification, and analysis

X-ray diffraction and Braggs Law

Sample preparation and chemical treatment

第 **7** 讲 (12 月 15 日，上午 9:00-11:00，腾讯会议号：79693419965):

Identification, quantification, and analysis

Quantification and data interpretation

Scanning electron microscopy

第 **8** 讲 (12 月 17 日，晚上 20:30-22:30，腾讯会议号：54947181356):

Identification, quantification, and analysis

Atomic force microscopy

Thermal analysis

第 **9** 讲 (12 月 18 日，上午 9:00-11:00，腾讯会议号：95325695070):

Identification, quantification, and analysis

2D X-ray diffraction

Small-angle X-ray scattering

第 **10** 讲 (12 月 22 日，上午 9:00-11:00，腾讯会议号：79693419965):

Surface properties and clay-water interactions

Surface charges, basic interfacial and surface forces

Cation exchange, swelling, intercalation and organic solvation

第 **11** 讲 (12 月 24 日，晚上 20:30-22:30，腾讯会议号：54947181356):

Surface properties and clay-water interactions

Cation exchange, swelling, intercalation and organic solvation

Clay-water-ion interactions: adsorption, absorption, and bonding mechanisms

第 **12** 讲 (12 月 25 日，上午 9:00-11:00，腾讯会议号：95325695070):

Surface properties and clay-water interactions

Clay-water-ion interactions: adsorption, absorption, and bonding mechanisms

Solubility and ion exchange

第 **13** 讲 (12 月 29 日，上午 9:00-11:00，腾讯会议号：79693419965):

Surface properties and clay-water interactions

Solubility and ion exchange

第 **14** 讲 (12 月 31 日，晚上 20:30-22:30，腾讯会议号：54947181356):

Introduction of Molecular Dynamics Simulations

Basic Newton’s Laws

Atomic structural models

第 **15** 讲 (1 月 1 日，上午 9:00-11:00，腾讯会议号：95325695070):

Introduction of Molecular Dynamics Simulations

Atomic structural models

Interatomic forces and bonds

第 **16** 讲 (1 月 5 日，上午 9:00-11:00，腾讯会议号：79693419965):

Introduction of Molecular Dynamics Simulations

Interatomic forces and bonds

Force fields

第 **17** 讲 (1 月 7 日，晚上 20:30-22:30，腾讯会议号：54947181356):

Introduction of Molecular Dynamics Simulations

Force fields

Common MD simulation platforms: LAMMPS, Materials Studio, GROMACS

第 **18** 讲 (1 月 8 日，上午 9:00-11:00，腾讯会议号：95325695070):

Introduction of Molecular Dynamics Simulations

Common MD simulation platforms: LAMMPS, Materials Studio, GROMACS

Output analysis and visualization

第 **19** 讲 (1 月 12 日，上午 9:00-11:00，腾讯会议号：79693419965):

Introduction to Profex for diffraction data

Qualitative analysis

第 **20** 讲 (1 月 14 日，晚上 20:30-22:30，腾讯会议号：54947181356):

Introduction to Profex for diffraction data

Quantitative analysis