The 2nd Shaoxing International Forum
on Rock Mechanics and Engineering Geology (SXFRG)

New Technologies in Rock Mechanics and Engineering Geology

October 19–21, 2019
Shaoxing, China

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INVITATION

The 2nd Shaoxing International Forum on Rock Mechanics and Engineering Geology (SXFRG) will be held on October 19 -21, 2019 at Shaoxing University, China. It is hosted by Shaoxing University, sponsored by ISRM, IAEG, NSFC, CSRME, ENGEO, IJRMMS and JRMGE, and supported by more than 20 organizations.

The forum will focus on *New Technologies in Rock Mechanics and Engineering Geology*. The aim of the forum is to share the practical experiences and achievements on the development of engineering methods and geo-techniques in infrastructure construction.

Top scientists, well-known experts, scholars and technical consultants will attend the forum from the fields of *Rock Mechanics*, *Engineering Geology* and Environment, and *Geotechnics* all around the world.

We sincerely invite you to be together on the forum.

OBJECTIVES OF THE FORUM

With the rapid advancement of economic globalization and the construction of the “Belt and Road” being increasingly valued by more and more nations, a new stage of deep cooperation worldwide in infrastructure construction has gradually formed. The successful development of large-scale construction requires the joint efforts of experts from the fields of rock mechanics and engineering geology. Therefore, it is the responsibility for ISRM and IAEG, the two leading scientific societies, to further promote the exchanges and cooperation to jointly solve key problems that are constantly emerging in the construction projects.

Correspondingly, some conventional engineering geological and rock mechanical test methods, monitoring and survey technologies can no longer meet the challenges of new projects in terms of scale, depth and difficulty. Their improvements together with the introduction of new technologies have become an urgent demand in global engineering construction. At the same time, the test methods and technical codes from different countries have led to frequent contradictions and difficulties in international cooperation, leading to higher demands for the standardization of technical means.

Under the above opportunities and challenges, the development of highly targeted engineering methods and techniques is the common goal pursued by the global engineering geology and rock mechanics scholars. This is the topic to be discussed on this forum.

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Shaoxing University

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- International Society for Rock Mechanics and Rock Engineering (ISRM)
- International Association for Engineering Geology and the Environment (IAEG)
- National Natural Science Foundation of China (NSFC)
- Chinese Society for Rock Mechanics and Engineering (CSRME)
- IAEG China National Group
- International Journal of Rock Mechanics and Mining Sciences (IJRMMS)
- Journal of Rock Mechanics and Geotechnical Engineering (JRMGE)

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IGGCAS, China

Haris Saroglou

National Technical University Athens, Greece

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Tongji University

Bo-An Jang

Kangwon National University, Korea

Hengxing Lan

IGSNRR, CAS, China

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IM CAS, China

Xiao Li

IGGCAS, China

Yu Liu

NSFC, China

Silvina Marfil

Universidad Nacional del Sur, Argentina

Pinnaduwa Kulatilake

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Agenda

Date	Time	Program	Location
October 18 (Friday)	09:00-20:00	Registration	Shaoxing Yonghe Manor Hotel
October 19 (Saturday)	08:00-08:30	Opening Ceremony	Tiecheng S & E Hall, Shaoxing University
	08:50-17:45	Technical Reports	
	18:30-20:30	Welcome Dinner	Shaoxing Yonghe Manor Hotel
October 20 (Sunday)	08:00-16:10	Technical Reports	Tiecheng S & E Hall, Shaoxing University
	16:10-17:30	Proposal Announcement	
	17:30-17:40	Closing Ceremony	
	18:30-20:30	Dinner	Shaoxing Yonghe Manor Hotel
October 21 (Monday)	09:00-12:00	Technical Excursion	Powerchina Huadong Engineering Co., Ltd.

Important Dates

Deadline of Abstract Submission	September 1, 2019
Deadline of PPT Submission	October 1, 2019
Forum	October 19-20, 2019
Technical Excursion	October 21, 2019
Deadline of Registration	October 1, 2019

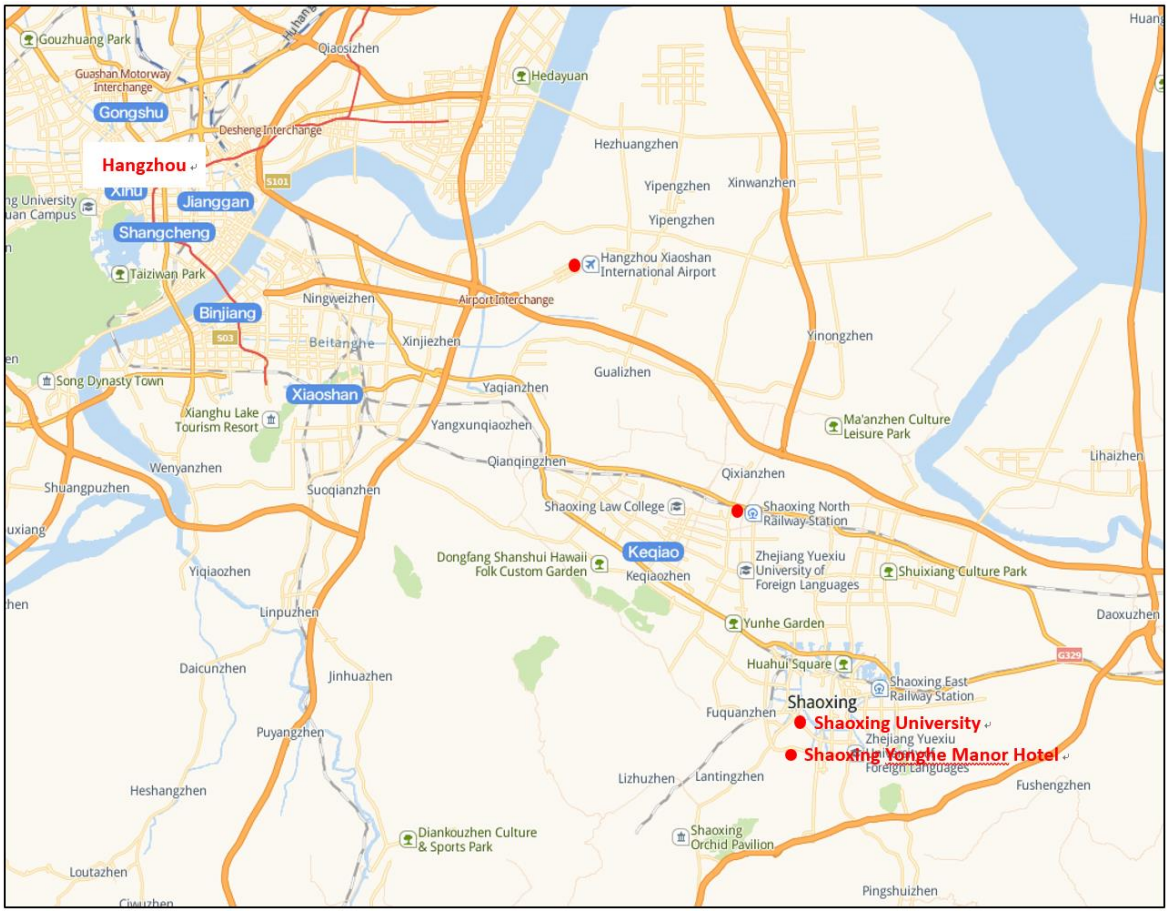
Conference Venue:

Tiecheng Science and Education Hall, Shaoxing University,

No. 508 Huanchengxilu, Shaoxing, Zhejiang

Hotel:

Shaoxing Yonghe Manor Hotel



Contact

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中国地质学会工程地质专业委员会
国际工程地质与环境协会中国国家小组

关于推进地质工程勘察行业技术革新的倡议书

地质工程勘察行业的主要工作是现场地质调查、测试与数据采集等技术工作，但是当今工程地质勘察行业的总体技术水平相对落后，严重制约着行业的发展。

鉴于此，中国地质学会工程地质专业委员会（国际工程地质与环境协会 IAEG 中国国家小组）会同相关企业、高校和研究院所，共同倡议：推进工程地质勘察行业技术革新。

一、时代背景

1. 工程地质勘察行业技术水平的基本估计

尽管新技术不断得到引进和应用，但目前工程地质勘察行业的总体技术水平仍落后于行业需求。

· 工程地质测绘：遥感与 GIS 技术应用为工程地质测绘提供了有效的辅助手段；但地面技术工作仍以跋山涉水、人工测量、手绘填图为主要工作模式。

· 工程地质勘探：物探应用为工程地质勘探提供了相对成熟的补充手段；各类钻孔测量、测试技术有效提升了勘探工作利用效率；但勘探工作总体上仍以钻探、硐探、坑槽探为获取地质资料的直接手段，设备相对陈旧笨重。

· 工程地质测试：实验室测试设备与技术的不断改进有力提升了岩土体测试可靠性，但现场采样、运输、制样、测试环节繁琐，耗力、耗资、耗时；而现场测试设备相对陈旧笨重、测试技术改进缓慢。

· 工程地质监测：近年来天-空-地协同监测技术得到初步推进；传感技术与互联网信息传输技术逐步得到应用；但精确定位和和多物理量监测仍处于探索阶段。

· 缺少行业组织：目前工程地质勘察行业技术改进总体呈现碎片化引进与研发状态，缺乏行业规划和组织。

· 技术标准更新：工程地质勘察行业技术标准的先进技术引领性不足。

2. 工程地质勘察技术革新的时代背景

当前世界科学技术不断进步、各国利好的科技创新政策，以及科技人才队伍的成长，为工程地质勘察技术革新提供了丰富的时代资源。

· 井喷式的通用新技术：卫星定位、集成电子、传感器、新材料、机器人、无人机、移动

通信、物联网、云计算、大数据、人工智能，以及软件技术等，为工程地质勘察行业的技术集成创新提供了丰富时代资源。

· 各国技术创新政策支持：世界各国科技创新需求旺盛；各国对教育和人才培养的高度重视，为支持技术创新营造了良好的政策和心理环境。

二、工程地质勘察行业技术革新的基本任务

1. 工程地质勘察行业技术革新的宗旨

工程地质技术革新的基本宗旨是：推进工程地质技术手段的便捷化、智能化，大幅减轻劳动强度，提升工作效率，降低勘察成本。

2. 工程地质勘察行业技术革新的基本内容

工程地质勘察行业技术革新的基本途径是，吸收现代科学技术成果，通过集成创新，全面改造和提升工程地质技术和手段。工程地质勘察行业技术革新的基本内容包括

· 天-空-地一体化工程地质测绘技术；

· 便捷、智能现场测试与多源数据采集技术；

· 先进勘察技术；

· 高性能计算分析技术；

· 物联网监测预警技术；

· 现代技术标准体系建设；

· 人才培养体系建设等。

三、岩体工程地质勘察技术革新的推进措施

1. 本倡议发起单位和技术指导委员会将推进工程地质勘察新技术交流，促进技术与产品研发平台搭建，协调产品技术鉴定、技术标准制定和实施推行。

2. 涉及本倡议研发工作的团队将自行申请本单位、行业、地方和国家各类资金，保障技术研发、技术交流和标准制定的基本经费支持。

2019 年 10 月 20 日，中国绍兴

关于推进地质工程勘察行业技术革新的倡议书
倡议发起单位

中国地质学会工程地质专业委员会

国家工程地质与环境协会中国国家小组

铁道标准委员会地质勘察专业委员会

绍兴文理学院

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中铁第一勘察设计院集团有限公司

建设部综合勘察设计研究院

中国机械工业勘察设计研究院

中兵勘察设计研究院有限公司

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中国地质大学

同济大学

成都理工大学

长安大学

浙江大学

中国科学院地质与地球物理研究所

中国科学院武汉岩土力学研究所

华汇工程设计集团股份有限公司

浙江岩创科技有限公司

杭州鲁尔物联科技有限公司

青岛乾坤兴智能科技有限公司

四川奥思特边坡防护工程有限公司

关于推进地质工程勘察行业技术革新的倡议书
技术指导委员会和工作委员会

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秘书长：伍法权

技术工作委员会：(按姓氏笔画顺序排列)

主　席：张　炜

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秘书长：李　博

Proposal for Technological Innovation in Geo-engineering Survey

The main work of geo-engineering survey is field investigation, testing and information collection. Since the technology of geo-engineering survey has been lagged far behind the demand of the industry, the China National Group of IAEG, has worked with the related enterprises, universities and research institutes to launch the initiative of *Technology Innovation in Geo-Engineering Survey*.

I. Technical Background

1. The current technological status in geo-engineering survey

Though new technology has been continuously applied, the global technical level is still lagged far behind the demand of the industry.

· Mapping: though the remote sense and GIS have provided efficient means for geo-engineering mapping, the working model is still carried out on manual labor.

· Prospecting: geophysical prospecting has been a helpful way for geo-engineering prospection; various measuring and testing techniques have improved the efficiency of boring data collection. However, geo-engineering prospection is mainly relying on exploration of drilling, adit and trenching for data acquirement. The equipment is not only old, but also heavy, which has not been changed for the past decades.

· Testing: though the laboratory equipping is continuously improved, the process of field sampling, transportation, sample making and testing is still inconvenient, laborious and time-consuming.

· Monitoring: the collaborative space-air-ground monitoring technics has been developed in recent years, and the technology of sensor and information transmission through internet has been widely applied. But the precision of positioning and multi-factor monitoring are still in exploration.

· Organizing: the current R&D on technical improvement of geo-engineering survey is fragmentedly applied, the industrial organizing is still a short slab.

· Technical standards: technical standards of the industry seem to be insufficient in leading nature.

2. The background for the technical revolution of the industry

· The blowout-like new techniques: new techniques have provided rich time-resources for the integrated innovation of the industry, including satellite positioning, integrated electronics, sensors, new materials, robot, drone, mobile phone, internet of things, cloud calculation, big data, artificial intelligence and advanced software, etc.

· The policy support for innovation: series of policies supporting technical innovation of enterprises and talents have been put forward and implemented.

II. Tasks of the Technology Innovation

1. The aim and concept update

The Technology Innovation aims at More Convenient and More Intelligent Geo-engineering Survey, reducing labour intensity, as well as the consuming of time and money, but raising working efficiency.

2. Frame of the action

Technology Innovation is a major undertaking, an overall reforming and raising of the techniques of the industry, through absorbing modern techniques and integrated innovation. The techniques to be improved mainly includes:

- Space-air-ground mapping;
- In-situ testing and integrated data acquisition;
- Advanced prospecting and data collecting techniques;
- High -performance computing and analyzing;
- Internet-of-things Monitoring;
- Modern technical standards;
- Professional education and training, etc.

III. Promoting Measures

1. The proposers are responsible for promoting the technical cooperation and exchange, R&D platform, technical appraisal and exhibition of the products, and establishment and implementation of related technical standards.

2. All the related innovative activities need to be funded by the executants, and the proposers will promote financial support from different sources.

The proposers:

China National Group of IAEG

Shaoxing University

China Railway Design Group Co., Ltd.

China Railway First Survey and Design Institute Group Co., Ltd.

CIGIS (China) Limited

China Jikan Research Institute of Engineering Investigation and Design, Co., Ltd.

China Ordnance Industry Survey and Geotechnical Institute Co., Ltd.

Power China Huadong Engineering Co., Ltd.

Power China Chengdu Engineering Co., Ltd.

Yangtze Academy of Sciences

Yellow River Engineering Consulting Co., Ltd.

BeiFang Investigation, Design & Research Co., Ltd.

China University of Geosciences

Tongji University

Chengdu University of Technology

Chang'an University

Zhejiang University

Institute of Geology and Geophysics, Chinese Academy of Sciences

Institute of Rock and Soil Mechanics, Chinese Academy of Sciences

Zhejiang Rock Innovation Co., Ltd.

RUHR IoT Technology Co. Ltd

October 20, 2019, Shaoxing, China