



南京工业大学  
NANJING TECH  
UNIVERSITY

# 第四届城市与工业安全国际会议

The 4<sup>th</sup> International Symposium on Urban and Industrial Safety

## 会议手册

中国·南京 2022年12月03-04日

主 办：南京工业大学

共同主办：中国科学技术大学

中国安全生产科学研究院

中国台湾云林科技大学

常州大学

华北科技学院 应急管理大学（筹）

承 办：南京工业大学安全科学与工程学院

江苏省高校安全科学与工程类专业联盟

# 南京工业大学简介

南京工业大学办学历史可溯源于 1902 年创办的三江师范学堂，2001 年由原南京化工大学与原南京建筑工程学院合并组建，是首批入选国家“高等学校创新能力提升计划”（2011 计划）高校，是江苏高水平大学建设高峰计划 A 类建设高校、江苏省重点建设高校、江苏省综合改革试点高校、江苏省人才强校试点高校、国家首批深化创新创业教育改革示范高校、国家级创新创业学院建设单位、全国高校实践育人创新创业基地、教育部首批卓越工程师培养计划试点高校、专业学位研究生教育综合改革试点高校、教育部国防教育特色学校、江苏省落实“科技创新改革 30 条”试点高校。学校秉承“明德、厚学、沉毅、笃行”的校训，以建成特色鲜明国内一流国际知名创业型大学为发展目标，坚持扎根中国大地办大学，形成了产学研协同创新的鲜明特色。

学校设有 11 个学部，28 个学院，各类学生 3.8 万余人。拥有国家一级重点学科 1 个，江苏省一级学科国家重点学科培育建设点 1 个，江苏高校国家重点学科培育建设点 2 个，江苏高校优势学科一期项目 4 项、二期项目 6 项、三期项目 6 项，“十三五”江苏省重点学科 2 个，“十四五”江苏省重点学科 8 个，博士后科研流动站 7 个，一级学科博士学位授予点 8 个、自主设置二级学科博士学位授予点 10 个、博士专业学位授予点 1 个，一级学科硕士学位授予点 29 个、自主设置二级学科硕士学位授予点 20 个，硕士专业学位授予点 18 个，本科专业 101 个，跨工、理、管、经、文、法、医、艺、教 9 个学科门类。教育部学位与研究生教育发展中心全国第四轮学科评估中我校化学工程与技术学科获得 A 等级，材料科学与工程、安全科学与工程学科获得 B+ 等级，其中化学工程与技术、材料科学与工程位列全省第一。学校 ESI 综合排名进入全球前 1%，位列中国内地高校第 55 位；化学、材料科学、工程学、生物学与生物化学、环境科学与生态学 5 个学科进入 ESI 全球前 1%，其中化学、材料科学 2 个学科进入 ESI 全球前 1%，位列全球百强。泰晤士高等教育 2023 年世界大学排名位列中国内地高校并列第 49 位；自然指数排名

位列中国内地高校第 41 位；上海软科 2022 年世界大学学术排名位列中国内地高校第 43 位。

学校现有教职工 3000 余人，拥有高级职称人员 1500 余人，其中中国科学院院士 3 人、中国工程院院士 7 人、第七届国务院学科评议组成员 2 人、第八届国务院学科评议组成员 1 人、国家级人才 163 人次，国家级高层次人才团队 15 个，省部级重点高层次人才 276 人次，省部级重点高层次人才团队 36 个。

学校坚持为党育人、为国育才，获中共中央表彰的全国先进基层党组织 1 个，全国党建工作“标杆院系”“样板支部”数与培育创建数位居省属高校第一，涌现出首批全国高校黄大年式教师团队等先进典型。学校加强“新工科”建设，23 个工科专业通过工程教育专业认证或住建部专业评估，进入全球工程教育“第一方阵”。学校注重拔尖创新人才培养，建设书院制“2011 学院”，与中科院相关院所共建“英才班”。获国家级教学成果一等奖 1 项、二等奖 4 项，省级教学成果特等奖 4 项、一等奖 9 项、二等奖 17 项。现有国家级教学团队 2 个、国家级课程思政教学名师和团队 2 个、国家级实验教学示范中心 1 个、国家级一流本科专业建设点 31 个、国家级特色专业建设点 7 个、教育部专业综合改革试点 2 个、教育部卓越工程师教育培养计划试点专业 7 个、国家级课程思政示范课程 2 门、国家级一流本科课程 9 门、国家级精品课程 3 门、国家级双语教学示范课程 2 门、国家级精品资源共享课 2 门、全国教材建设奖全国优秀教材（高等教育类）1 项、国家级精品教材 1 部、“十二五”国家级规划教材 8 部、首批江苏省研究生优秀教材 2 部、江苏省课程思政示范专业 2 个、江苏省一流本科专业建设点 20 个、江苏高校品牌专业建设工程一期项目 5 个、江苏省品牌专业 8 个、江苏省特色专业 10 个、江苏省重点专业类 12 个（涵盖 30 个专业）、江苏省卓越工程师教育培养计划（软件类）试点专业 2 个、省级产教融合型品牌专业建设点和培育点 4 个、省实验教学示范中心 18 个、江苏省课程思政建设示范课程 4 门、省级一流本科课程 41 门、江苏省本科优秀培育教材 7 部、省级重点立项建设教材 68 部。2006 年学校获得教育部组织的本科教学工作水平评估优秀等级，2016 年顺

利通过教育部本科教学工作审核评估。2017年获批教育部首批中美青年创客交流中心。多年来学校已经培养出20多位省部级以上领导干部、30多位两院院士、100多位央企和上市公司领导，为社会输送了大批高质量人才。

学校具有雄厚的科研实力，设有材料化学工程国家重点实验室、国家柔性电子材料与器件国际联合研究中心、国家生化工程技术研究中心、国家特种分离膜工程技术研究中心、国家热管技术研究推广中心、国家大学科技园、江苏先进生物与化学制造协同创新中心等国家级科研平台7个，省部级研究中心28个，省部级重点实验室29个。“十二五”以来，学校科研项目及成果获各级各类奖励500余项，其中，国家技术发明奖二等奖6项、国家科技进步奖二等奖6项、国家自然科学基金二等奖1项，获教育部“中国高等学校十大科技进展”2项。现有7人荣获何梁何利基金科学与技术奖。现有科技部“创新人才推进计划中青年科技创新领军人才”6人、“创新人才推进计划重点领域创新团队”1个，教育部“创新团队发展计划”滚动支持1个。

学校重视科学研究成果转化，主动将创新链对接产业链，推动产学研深入合作。南京工业大学科技园为国家级大学科技园，南京工业大学技术转移中心为国家技术转移示范机构，拥有国家知识产权培训（江苏）基地。学校推进校地融合、产教融合，与地方政府合作建立了数十家新型研发机构、产业研究院和产业学院。现有国家级现代产业学院1个，省级重点产业学院2个。学校加强校企合作，与中国建筑股份有限公司、中国石油化工集团公司、中兴通讯股份有限公司、中国华润有限公司等央企、行业龙头企业开展战略合作。“十二五”以来，承担了包括国家重点研发计划项目、国家“973”计划项目、“863”计划项目、国家科技支撑计划项目、国家自然科学基金项目在内的各级各类课题万余项，科技经费近70亿元，取得了一批高水平研究成果，为相关行业、江苏地方经济建设和社会发展作出了积极贡献。

学校实施全球拓展战略，成为首批通过来华留学认证的22所高校之一；与23个国家和地区的百余所海外大学和科研机构建立了合作关系，其中，与英国帝国理工学院、俄罗斯莫斯科国立大学、新加坡南洋理工大学等世界著名学府成立了“国家级柔性电子材料与器件国际联合研究中心”“教育部柔

性电子国际合作联合实验室”；“柔性电子学科创新引智基地”入选国家“高等学校学科创新引智计划”；与南非约翰内斯堡大学、西班牙萨拉戈萨大学共建“孔子学院”，是“孔子学院奖学金”接收院校；与法国勃艮第大学合作举办控制科学与工程（机器视觉）硕士教育中外合作办学项目；与爱尔兰都柏林理工大学合作举办机械工程、制药工程、电子信息工程以及土木工程等4个“3+1”本科教育中外合作办学项目，其中机械工程、制药工程项目入选江苏高校中外合作办学高水平示范性建设工程项目；与澳大利亚昆士兰大学合作举办电气工程及其自动化、数据科学与大数据技术“2+2”本科联合培养项目，与澳大利亚麦考瑞大学合作举办会计学“2+2”本科联合培养项目；与英国剑桥大学、英国牛津大学、德国亚琛工业大学、美国加州大学戴维斯分校、英国卡迪夫大学、新加坡国立大学等知名高校开展学生交流项目；推进国际产学研合作。现有包括中国政府友谊奖获得者在内的、来自10多个国家的近50名外籍专家和世界各国的学历海外留学生600余人。

展望未来，学校将深入学习贯彻习近平新时代中国特色社会主义思想，全面贯彻党的教育方针，落实立德树人根本任务，践行教育科技报国使命，以特色鲜明国内一流国际知名创业型大学为目标，对标“双一流”，聚焦高质量，改革攻坚创新突破，团结一致接续奋斗，奋力谱写学校事业发展新篇章。

（数据统计至2022年9月）

# 安全科学与工程学院简介

安全科学与工程学院下设三个教学单位（安全工程系、消防工程系、实验教学中心）和四个科研机构（安全工程研究所、火灾与消防工程研究所、安全生产检验检测中心、安全技术服务中心），拥有“矿业工程”、“安全科学与工程”两个一级学科博士后科研流动站；“安全科学与工程”一级学科博士学位授予点，“资源与环境”专业硕士学位授予点；安全工程和消防工程2个本科专业。

学院始终围绕经济社会发展需求，走特色发展之路。经过多年建设，形成了以“大安全、大应急”为学科发展布局，以化工安全为学科发展特色，坚持与学校传统优势学科如化工、材料、机械交叉融合，逐步确立了以“城市与工业安全”为重点的学科发展目标与方向。安全科学与工程学科2006年被遴选为江苏省重点学科，2011年入选江苏省高校优势学科建设工程立项学科（首期），2014年、2018年先后被遴选为江苏省高校优势学科二期、三期建设学科。学科拥有应急管理部化工过程安全生产重点实验室，江苏省危险化学品本质安全与控制技术重点实验室，江苏省城市与工业安全重点实验室，中国石油和化学工业联合会化工过程安全控制重点实验室等4个省部级重点实验室。安全工程专业为国家首批一流本科专业建设点（2019年），国家卓越工程师培养计划试点专业，国家首批特色专业（2008年），江苏省品牌专业（2006年），江苏省重点专业（2012年），江苏省高校品牌专业（一期，2015年；二期，2019年）。2014年，2020年先后两次通过教育部高等教育教学评估中心组织的中国工程教育认证（有效期六年）。消防工程专业为江苏省一流本科专业建设点（2021年）。在2016年教育部学位与研究生教育发展中心第四轮学科评估中，南京工业大学安全科学与工程学科等级为B+。

学院现拥有教职工近70人，其中教学、科研人员50余人。入选国家级人才项目2人，科技部中青年科技创新领军人才1人，国家“百千万人才工程”2名，全国优秀科技工作者1名，全国突出贡献中青年专家1名，中国青年科技奖获得者1名，教育部“青年骨干教师计划”1名，教育部“新世纪优

秀人才支持计划”1名，享受国务院特殊津贴1名。此外，20余名教师入选江苏省“杰青”、江苏省特聘教授、江苏省“333高层次人才培养工程”中青年科技领军人才、江苏省“六大人才高峰”等人才计划；先后获批江苏省高校“青蓝工程”科技创新团队、江苏高校优秀科技创新团队、中国石油与化学工业联合会创新团队、江苏省“六大人才高峰”创新人才团队等省部级科研创新团队5个。柔性引进国际欧亚科学院院士、北京理工大学冯长根教授为特聘教授；聘请香港工程科学院院士、香港理工大学周允基教授、美国Texas A&M大学Qingsheng Wang教授、香港城市大学卢兆明教授等为客座教授。

在人才培养方面，学院坚持以学生为本，理论与实践教学并重，突出学生工程能力培养。学院依托安全评价和安全生产标准化评审资质，为学生工程实践能力提升提供良好实践平台；加强校企联合，先后与南京消防器材股份有限公司、南京炼油厂有限责任公司等企业共建实习实践基地；坚持“请进来，走出去”，邀请企业专家走进教室，学生走进企业，助教跟岗教学、跟岗实习，学生“岗位实习”让学生将所学的专业知识服务于企业生产；学院不断改进教学管理模式，推行有关教学制度改革，提升本科教学质量，先后编写出版专业教材14部，其中江苏省重点教材6部，《危险化学品安全技术与管理》（第三版）荣获首届全国优秀教材二等奖；获江苏省教学成果二等奖等省部级教学成果奖励近10项；获批省级一流课程4门；获教育部产学协同育人项目等省部级教学教改项目10余项；通过校企协同育人，专业学生先后获全国“挑战杯”、全国大学生化工安全设计大赛等省部级学生创新创业竞赛奖励50余项。学院研究生获得全国优秀博士学位论文提名1篇，中国消防协会优秀博士学位论文3篇，江苏省优秀硕士学位论文近10篇。

在科学研究方面，瞄准科技学术前沿，紧密结合国家与行业重大需求，设立了危险化学品安全、化工过程安全、新能源与新材料安全、公共安全与应急管理4个特色鲜明的研究方向。近年来，先后承担了国家重点研发计划、国家自然科学基金重点项目等国家及省部级科研项目100余项，年均科研到款2800万元，发表SCI检索论文400余篇，出版学术专著8部；获国家授权专利100余项；参与编制国家标准1项，全国安全生产行业标准3项，

牵头编制团体标准 4 项，地方标准 3 项。获国家科技进步二等奖 1 项，江苏省科学技术一等奖等省部级科技奖励 18 项。

在社会服务方面，学院依托所具备的安全评价资质、江苏省安全生产标准化二级评审资质以及应急管理部化学品物理危险性鉴定资质（筹），近年来为推动科技成果转化，服务地方经济建设做出了重要贡献。在安全技术培训方面，承担了甘肃省、常州市、昆山市安监局等省市安监部门安全监管业务能力提升培训；承担了注册安全工程师、注册消防工程师的培训工作。在风险分析及评价方面，承担了江苏滨海经济开发区化工园、大连大孤山化工园区、昆山千灯化工园区、连云港化工园区等大型化工园区的风险分析与评估工作；承担了神华鄂尔多斯煤制油、中石化南化公司、德纳化工等企业的工艺危险性研究，为企业的安全运行提供了强有力的技术支撑与保障。

在国际合作与学术交流方面，学院先后与美国德克萨斯 A&M 大学签订了本科教学国际合作交流协议，与英国萨里大学开展联合培养博士研究生项目等。承办了安全科学与技术国际会议（2012 年主办并承办，2014、2018 年主办）、中美及中法（2015 年）双边化工过程安全学术研讨会、第八届火灾科学与消防工程国际研讨会（2017 年）、第三届中国国际化工过程安全研讨会（2017 年）、第三届城市与工业安全国际会议（2019 年）、第 32 届全国高校安全科学与工程学术年会（2020 年）等国际国内学术会议；在中法“徐光启”项目、中法“蔡元培”交流合作项目、国家留学基金委项目、江苏省政府留学基金项目等资助下前往美国、加拿大、法国、中国香港等国（境）外著名高校和科研机构进修 30 余人次，不断提升学院在国内外的学术影响力和知名度。

（数据统计至 2022 年 3 月）





# 前 言

尊敬的各位领导、同仁、嘉宾：

您好！

欢迎您相聚线上，参加于2022年12月03-04日举行的第四届城市与工业安全国际会议。

城市与工业安全涉及土木、化工、工程热物理等多个领域知识的学科交叉，主要关注过程工业和城市化进程中的泄漏、火灾、爆炸、中毒等安全问题，与人民生命财产安全密切相关。该会议已经成功举办三届，第四届城市与工业安全国际会议（The 4th International Symposium on Urban and Industrial Safety）由南京工业大学等单位主办，会议主题包括但不限于：

- 危险化学品安全
- 反应风险评估
- 工业过程安全
- 本质安全设计
- 新材料安全
- 新能源安全
- 爆炸安全与防护
- 工业过程监测预警
- 城市生命线安全
- 矿山与地下工程安全
- 消防安全
- 人员安全与安全文化
- 城市风险评估
- 应急技术及管理

会议旨在围绕上述主题，探索交流安全学科中的前沿科学理论，研讨有关城市与工业安全科学技术的发展理念，分析学科发展的新趋势。希望通过本次会议，搭建学术交流平台，在广泛、深入的学术交流中激发新思想、新观点，助推城市与工业安全领域科学技术的发展，扩大国际间的学术交流。

祝您工作顺利，身体健康，万事如意！

第四届城市与工业安全国际会议组织委员会  
2022年12月



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# 一、会议简介

## 会议时间

2022年12月03-04日

## 会议形式

线上直播：<https://lm.ewewie.com/portal/YSLCQN>

或者扫下面二维码参会：



会议网址：[www.isuis.org](http://www.isuis.org)

## 主办单位：

南京工业大学

## 共同主办单位：

中国科学技术大学

中国安全生产科学研究院

中国台湾云林科技大学

常州大学

华北科技学院 应急管理大学（筹）

## 承办单位：

南京工业大学安全科学与工程学院

江苏省高校安全科学与工程类专业联盟


## 支持单位：

国务院学位委员会安全科学与工程学科评议组

教育部全国高等学校安全科学与工程类专业教学指导委员会

江苏省化学化工学会

江苏省消防协会

 **协办单位:**

安元科技股份有限公司

中安广源检测评价技术服务股份有限公司

江苏中安科技服务有限公司

厦门熙宝源科技集团有限公司

## 二、会议组织机构

### 一、大会主席

#### 大会主席：

范维澄 中国工程院院士，清华大学公共安全研究院院长

Prof. Paul Amyotte Dalhousie University, Canada

#### 副主席：

张来斌 中国工程院院士，中国石油大学（北京）教授

冯长根 国际欧亚科学院院士，北京理工大学教授

蒋军成 南京工业大学教授

### 二、学术委员会

#### 主席：

Prof. Hans Pasman Texas A&M University, USA

蒋军成 南京工业大学教授

#### 副主席：

周福宝 中国安全生产科学研究院教授

张瑞新 华北科技学院教授

张和平 中国科学技术大学教授

Prof. Faisal Khan Texas A&M University, USA/ Memorial University, Canada

Prof. Szilágyi Imre Miklós Budapest University of Technology and Economics, Hungary

Prof. Ronald J. Willey Northeastern University, USA

Prof. Chi-Min Shu Yunlin University of Science and Technology, Taiwan, China

#### 委员会成员：

毕明树 大连理工大学教授

陈国华 华南理工大学教授

程卫民 山东科技大学教授

邓军 西安科技大学教授



董绍华	中国石油大学（北京）	教授
傅 贵	中国矿业大学（北京）	教授
高建良	河南理工大学	教授
华心祝	安徽理工大学	教授
金龙哲	北京科技大学	教授
李树刚	西安科技大学	教授
刘 剑	辽宁工程技术大学	教授
刘乃安	中国科学技术大学	教授
罗振敏	西安科技大学	教授
聂百胜	重庆大学	教授
牛国庆	河南理工大学	教授
潘 勇	南京工业大学	教授
潘旭海	南京工业大学	教授
钱新明	北京理工大学	教授
秦波涛	中国矿业大学	教授
申世飞	清华大学	教授
施式亮	湖南科技大学	教授
孙金华	中国科学技术大学	教授
王 成	北京理工大学	教授
王 凯	中国矿业大学（北京）	教授
王恩元	中国矿业大学	教授
魏利军	中国安全生产科学研究院副院长，教授级高工	
邢志祥	常州大学	教授
徐 伟	中国石化青岛安全工程研究院副院长，教授级高工	
许开立	东北大学	教授
余明高	重庆大学	教授
袁宏永	清华大学	教授
张 辉	清华大学	教授

赵东风 中国石油大学（华东） 教授  
钟茂华 清华大学 教授  
周子龙 中南大学 教授  
朱红青 中国矿业大学（北京） 教授  
Prof. Ahamed Marbarki Université Paris-Est, France  
Prof. Asif Usmani The Hong Kong Polytechnic University, Hong Kong, China  
Prof. Qingsheng Wang Texas A&M University, USA  
Prof. Siuming Lo City University of Hong Kong, Hong Kong, China  
Prof. Jianjun Xiao Karlsruhe Institute of Technology, Germany

### 三、组织委员会

#### ✚ 主 席：

潘 勇 南京工业大学 教授  
喻 源 南京工业大学 研究员

#### ✚ 副主席：

徐景德 华北科技学院 教授  
王青松 中国科学技术大学 教授  
邢志祥 常州大学 教授  
王静虹 南京工业大学 教授

#### ✚ 委员会成员：

陈先锋 武汉理工大学 教授  
陈长坤 中南大学 教授  
郭 耸 南京理工大学 教授  
刘 义 中国石油大学（华东） 教授  
马 剑 西南交通大学 教授  
欧红香 常州大学 教授  
佟瑞鹏 中国矿业大学（北京） 教授

王昌建	合肥工业大学	教授
尤 飞	南京工业大学	教授
袁梦琦	北京理工大学	教授
张 彬	南京工业大学	教授
张明广	南京工业大学	教授
仲晓星	中国矿业大学	教授
周 刚	山东科技大学	教授
周 汝	南京工业大学	教授
周魁斌	南京工业大学	教授

## 三、参会指南

### 1. 参会须知

请参会人员认真阅读本会议手册，按时参加会议和有关活动。如需帮助，请及时和会务组工作人员联系。

#### 会务组联系方式

总协调：王静虹	17372278336	arain@njtech.edu.cn
会 务：王庆国	15077880689	wqg@njtech.edu.cn
王苏盼	18751972614	wangsp@njtech.edu.cn
学 术：周魁斌	18761809648	kbzhou@njtech.edu.cn
龚俊辉	15261823963	gjh9896@njtech.edu.cn
网 站：赵 坤	15190490170	kzhao@njtech.edu.cn
外 联：王彦钧	17826085616	yanjun.wang@njtech.edu.cn
王振华	15251710528	wzhnj@njtech.edu.cn
财 务：马丛明	15950568027	maming1206@126.com
后 勤：陆春义	13770838028	306778007@qq.com
董 骏	15195918946	dong_jun@njtech.edu.cn

### 2. 大会召开形式/The Conference venues

非报告人员请通过线上直播：<https://lm.enewie.com/portal/YSLCQN>

或者扫下面二维码参会：



会议网站：[www.isuis.org](http://www.isuis.org)

会议微信群：第四届城市与工业安全国际会议

### 3. 报告人会议交流须知

(1) 会议全程采用腾讯会议、Zoom 网络研讨会形式进行，请所有报告人在分会场开始前，提前 20 分钟进入腾讯或 Zoom 会议对应会议室，**分会场主持人及报告人**请查看会议日程安排的**会议号及密码**。

(2) 所有报告均由报告人通过腾讯或 Zoom 会议现场共享演示。

(3) 大会邀请和分会场主题报告：请严格遵守报告时间，共演讲 30 分钟，演讲还剩 2 分钟时将提示。

(4) 会议论文口头报告：请严格遵守“会议手册安排”中的报告时间，分会场口头报告每个 20 分钟，汇报 15-18 分钟，其余为提问时间，第 15、18 和 20 分钟有时间提示。

(5) 报告人请采用会议主办方发送的会议背景。

### 4. 主会场及分会场主持人须知

(1) 分会场主持人负责整个分会场的报告和问答，请两位主持人做好分工。如果有分会场主持人作为共同作者的论文，应该由另一个分会场主持人来主持。

(2) 分会场主持人请提前 10 分钟进入会议，并检查报告人是否已经进入会议，每个分会场有 2 名会务组工作人员协助。

(3) 分会场开始时，分会场主持人首先进行自我介绍，并提醒非报告成员将自己静音。

(4) 邀请报告分会场主持人，请通过 PPT 介绍邀请报告人。

(5) 分会场主持人需要严格控制好时间，尽可能让每个报告开始的时间与会议手册上指定的时间一致。如果中间某个报告取消，不能将下一个报告的时间提前，应该休会等待，分会场主持人需要记录缺席报告的作者和单位，并汇报给程序委员会主席。

(6) 在问答期间，分会场主持人应该尽量避免某一个听众提问时间过长，也应该尽量避免报告人做过长时间的解释，从而导致其他听众没有提问时间，如果现场其他听众没有提问，分会场主持人应该提一到两个问题。

## 四、会议总日程安排/General Conference Schedule

时间		内容		会议号及密码
12月 03日	8:30-9:15	开幕式		腾讯会议 Tencent ID: 833-749-233
	9:15-11:45	大会特邀报告		密码 Passcode: 221203
	14:00-15:30	大会特邀报告		Zoom会议 Zoom ID: 817 9024 9359 密码 Passcode: 221203
	15:40-17:50	分论坛 报告主题	爆炸安全与防护	腾讯会议 Tencent ID: 593-839-558 密码 Passcode: 221203
			矿山与地下工程安全	腾讯会议 Tencent ID: 713-491-176 密码 Passcode: 221203
			风险评估	Zoom会议 Zoom ID: 899 6144 2055 密码 Passcode: 221203
12月 04日	08:30-10:00	大会特邀报告		Zoom会议 Zoom ID: 811 0006 3824 密码 Passcode: 221204
	10:00-12:10	分论坛 报告主题	消防安全	Zoom会议 Zoom ID: 862 9886 7775 密码 Passcode: 221204
			新能源/材料安全	腾讯会议 Tencent ID: 915-825-342 密码 Passcode: 221204
			危险化学品安全	腾讯会议 Tencent ID: 386-957-576 密码 Passcode: 221204
	14:00-15:40	分论坛 报告主题	人员安全与安全文化	腾讯会议 Tencent ID: 469-570-456 密码 Passcode: 221204
			消防安全	腾讯会议 Tencent ID: 418-466-899 密码 Passcode: 221204
			工业过程安全	腾讯会议 Tencent ID: 843-166-679 密码 Passcode: 221204
	15:40-16:00	闭幕式及优秀论文表彰		腾讯会议 Tencent ID: 701-896-125 密码 Passcode: 221204

## 五、会议详细日程安排/Detailed Conference Schedule

时间/Time	12月03日上午 AM, 03 December (UTC+08) 腾讯会议 Tencent ID: 833-749-233 密码 Passcode: 221203
<p style="text-align: center;"><b>开幕式 Opening Ceremony</b> 主持人: 潘勇 教授 南京工业大学 <b>Host: Prof. Yong Pan, Nanjing Tech University</b></p>	
08:30-08:35	<p>介绍与会嘉宾 <b>Introduction of Guests</b></p>
08:35-08:45	<p>主办单位领导蒋军成校长致辞 <b>Speech from Prof. Juncheng Jiang, President of Nanjing Tech University</b></p>
08:45-08:55	<p>大会主席范维澄院士致欢迎辞 <b>Speech from Prof. Weicheng Fan, Conference President of ISUIS 2022</b></p>
08:55-09:05	<p>教育部高校安全科学与工程类专业教学指导委员会主任 华北科技学院校长 张瑞新教授致辞 <b>Speech from Prof. Ruixin Zhang, Chairman of MoE National University Safety Science and Engineering Teaching Steering Committee, President of North China Institute of Science and Technology</b></p>
09:05-09:15	<p>南京工业大学“探·智”国际青年学者论坛宣传 <b>Propaganda of Nanjing Tech University “Exploring and Wisdom” International Young Scholars Forum</b></p>
<p style="text-align: center;"><b>大会特邀报告 Plenary Speech</b> 主持人: 张和平教授 中国科学技术大学/潘勇教授 南京工业大学 <b>Host: Prof. Heping Zhang, University of Science and Technology of China / Prof. Yong Pan, Nanjing Tech University</b></p>	
09:15-09:45	<p>城市韧性: 理念与进展 Urban resilience: concept and some progress 范维澄教授 中国工程院院士 清华大学 <b>Prof. Weicheng Fan, Academician of Chinese Academy of Engineering, Tsinghua University</b></p>
09:45-10:15	<p>城市燃气管网安全保障技术 Safety Guarantee Technology of City Gas Pipeline Network 张来斌教授 中国工程院院士 中国石油大学(北京) <b>Prof. Laibin Zhang, Academician of Chinese Academy of Engineering, China University of Petroleum, Beijing</b></p>
10:15-10:45	<p>聚焦高层次人才培养, 助力高质量发展 Focusing on cultivation of high-level talents to help high-quality development 冯长根教授 国际欧亚科学院院士 北京理工大学 <b>Prof. Changgen Feng, Academician of International Eurasian Academy of Sciences, Beijing Institute of Technology</b></p>
10:45-11:15	<p>热分析技术在锂电池安全测试中的应用 Application of thermal analysis technology in safety test of lithium battery 徐启铭教授 中国台湾云林科技大学 <b>Prof. Chi-min Shu, Yunlin University of Science and Technology, Taiwan, China</b></p>
11:15-11:45	<p>密闭空间 CO 产物的原位同步消纳方法研究 Study on in situ Synchronous Absorption of CO in Confined Space 周福宝 教授 中国安全生产科学研究院院长 <b>Prof. Fubao Zhou, Dean of China Academy Safety Science and Technology</b></p>

时间 /Time	12月03日下午 PM, 03 December (UTC+08)		
大会特邀报告 Plenary Speech 主持人: 徐启铭 教授 中国台湾云林科技大学 <b>Host: Prof. Chi-min Shu, Yunlin University of Science and Technology, Taiwan, China</b> Zoom 会议 Zoom ID: 817 9024 9359 密码 Passcode: 221203			
14:00-14:30	有限空间环保无压温敏微胶囊灭火技术 Fire extinguishing technology of environmental friendly and non-pressure temperature sensitive microcapsules in limited space <b>邓军教授</b> 副校长 西安科技大学 <b>Prof. Jun Deng, Vice President of Xi'an University Science and Technology</b>		
14:30-15:00	工业和社区的未來安全挑战 The future safety challenges both for industry and communities <b>Prof. Hans Pasman, Texas A&amp;M University</b>		
15:00-15:30	杂化复合氧化物与碳纳米流体 Hybrid and composite oxide and carbon nanofluids <b>Prof. Imre Miklós Szilágyi, University of Technology and Economics</b>		
分论坛报告 <b>Sub-Forum Speech</b>			
15:40-17:50	<b>爆炸安全与防护</b> <b>Explosion Safety and Protection</b> 主持人: 邢志祥、汪志雷 <b>Host: Zhixiang Xing, Zhilei Wang</b> 腾讯会议 Tencent ID: 593-839-558 密码 Passcode: 221203	<b>矿山与地下工程安全</b> <b>Mine and Underground Safety</b> 主持人: 程健维、董骏 <b>Host: Jianwei Cheng, Jun Dong</b> 腾讯会议 Tencent ID: 713-491-176 密码 Passcode: 221203	<b>风险评估</b> <b>Risk assessment</b> 主持人: 杨克、倪磊 <b>Host: Ke Yang, Lei Ni</b> Zoom 会议 Zoom ID: 899 6144 2055 密码 Passcode: 221203
15:40-16:10	<b>邀请报告:</b> Status and challenges of 3D CFD simulations of large-scale gaseous dispersions and explosions 报告人: <b>Jianjun Xiao</b> 单位: Karlsruhe Institute of Technology	<b>邀请报告:</b> A view on the fire escape code: A Hong Kong perspective 报告人: <b>Siuming Lo</b> 单位: City University of Hong Kong	<b>邀请报告:</b> Digital twins and risks - some applications in crowd evacuation 报告人: <b>Ahmed Mebarki</b> 单位: UNIVERSITÉ GUSTAVE EIFFEL
16:10-16:30	题目: Numerical analysis of the effect of ventilation door on the propagation characteristics of gas explosion shock waves 作者: <b>Jingzhang Ren, Xuebo Zhang, Jiajia Liu, Chunxian Wang</b> 单位: Henan Polytechnic University	题目: Study on dynamic response characteristics and structural optimization of sandwich sealed wall under the Impact of gas explosion wave 作者: Jianwei Cheng, Zui Wang, <b>Qiang Fu, Gao Ke, Leilin Zhang</b> 单位: China University of Mining and Technology	题目: Development and validation of a soft voting-based model for urban fire risk prediction 作者: <b>Zhijie Huang, Jingwei Ji</b> 单位: China University of Mining and Technology
16:30-16:50	题目: Suppression effects of	题目: Simulation study of heat	题目: Thermal risk assessment of



	<p>confined space on the explosive boiling under rapid depressurization  作者: <b>Liming Wei</b>, Supan Wang, Kai Liu, Xuhai Pan, Juncheng Jiang  单位: Nanjing Tech University</p>	<p>transfer in I-shaped louvered fin of heat exchanger at the end of mining fan  作者: Yongliang Zhang, <b>Zhen Hu</b>, Min Qu, Wentao Fan  单位: Qingdao University of Technology</p>	<p>hydrogenation reaction in biorefinery process: Application to <math>\gamma</math>-valerolactone production  作者: <b>Yanjun Wang</b>, Chaoqin Ren, Gan Wang, Yong Pan  单位: Nanjing Tech University</p>
16:50-17:10	<p>题目: Experimental study on suppression of methane-air explosion with different surface dispersants combined with modified attapulgite powder  作者: Ke Yang, <b>Guangyu Liu</b>, Hong Ji, Zhixiang Xing, Yongmei Hao, Juncheng Jiang  单位: Changzhou University</p>	<p>题目: Research and application of regional risk evaluation of coal mine based on grey clustering model and combined assignment method  作者: Yilong Wang, Ruixin Zhang, Yongming Wu, Yadong Fang, Hongqing Zhang, Yongfeng Qi, Qingquan Zhao, Yandong Song, <b>Weihong Guo</b>  单位: North China Institute of Science and Technology</p>	<p>题目: Risk assessment of urban crowded places based on combination weighting-SPA  作者: Lianhua Cheng, <b>Nan Li</b>, Shugang Li, Dongqiang Cao, Huimin Guo  单位: Xi'an University of Science and Technology</p>
17:10-17:30	<p>题目: Study on propagation characteristics of gas explosion disturbed by crushed rocks with different accumulation void fractions  作者: <b>Zhenqi Liu</b>, Xiaoxing Zhong, Qiu Zhong, Yansen Lu  单位: China University of Mining and Technology</p>	<p>题目: Experimental studies on the smoke temperature in bifurcated tunnel for fire located in branch tunnel under forced ventilation  作者: <b>Yueyang Luo</b>, Peiyao Zhang, Zhisheng Li, Yunji Gao, Tao Li, Yuchun Zhang  单位: Southwest Jiaotong University</p>	<p>题目: A safety evaluation system for urban metro and its applications  作者: Jianwei Cheng, <b>Yongzhen Ma</b>, Chang Qi, Shuping Sheng, Dezhi Ran  单位: China University of Mining and Technology</p>
17:30-17:50	<p>题目: Afterburning in two-dimensional detonations for aluminum-particle/C<sub>2</sub>H<sub>2</sub>/air system  作者: Jin Huang, <b>Qixiang Zhou</b>, Jianming Zhu, Wenhui Han  单位: Beijing Institute of Technology</p>	<p>题目: Investigation of filmwise condensation and flow characteristics on inner curved heat transfer surface  作者: Yongliang Zhang, <b>Min Qu</b>, Xilong Zhang  单位: Qingdao University of Technology</p>	<p>题目: A risk assessment model for classified supervision of hazardous chemicals transportation enterprises based on multi-source dynamic data  作者: <b>Mengchen Liu</b>, Mingguang Zhang, Zhen Xu  单位: Nanjing Tech University</p>

时间 /Time	12月04日上午 AM, 04 December (UTC+08)		
<p style="text-align: center;">大会特邀报告 Plenary Speech            主持人：潘旭海 教授（南京工业大学）  <b>Host: Prof. Xuhai Pan, Nanjing Tech University</b>            Zoom 会议 Zoom ID: 811 0006 3824 密码 Passcode: 221204</p>			
08:30-09:00	<p style="text-align: center;">数字化处理系统领域的安全            Safety in Digitalized Processing Systems  <b>Prof. Faisal Khan, Texas A&amp;M University, USA</b></p>		
09:00-09:30	<p style="text-align: center;">金属有机骨架化合物在塑料阻燃技术中的应用研究            Development of Flame Retardant Technology for Plastics using Metal-Organic Frameworks  <b>Prof. Qingsheng Wang, Texas A&amp;M University, USA</b></p>		
09:30-10:00	<p style="text-align: center;">低概率/高后果事件：预测和预防            Low Probability/High Consequence Incidents: Prediction and Prevention  <b>Prof. Paul Amyotte, Dalhousie University, Canada</b></p>		
<p style="text-align: center;">分论坛报告            Sub-Forum Speech</p>			
10:00-12:10	<p style="text-align: center;"><b>消防安全</b>  <b>Fire Safety</b>            主持人：吴西强、周汝  <b>Host: Xiqiang Wu, Ru Zhou</b>            Zoom 会议 Zoom ID:            862 9886 7775            密码 Passcode: 221204</p>	<p style="text-align: center;"><b>新能源/材料安全</b>  <b>New Energy/Material Safety</b>            主持人：鲁义、尤飞  <b>Host: Yi Lu, Fei You</b>            腾讯会议 Tencent ID:            915-825-342            密码 Passcode: 221204</p>	<p style="text-align: center;"><b>危险化学品安全</b>  <b>Hazardous Chemical Safety</b>            主持人：郭耸、赵坤  <b>Host: Song Guo, Kun Zhao</b>            腾讯会议 Tencent ID:            386-957-576            密码 Passcode: 221204</p>
10:00-10:30 (仅邀请报告 30 分钟, 其他报告 20 分钟)	<p><b>邀请报告:</b>            Are prevailing approaches for engineering structures to resist fire fit for purpose?            报告人: <b>Usmani Asif Sohail</b>            单位: Hong Kong Polytechnic University</p>	<p>题目: Numerical investigation of mitigating and suppressing thermal runaway propagation in a lithium-ion battery pack using thermal insulators            作者: Junhui Gong, Bo Liu, <b>Hui Fu</b>, Jingyi Liu, Jialong Liu            单位: Nanjing Tech University</p>	<p>题目: Research on the prediction model of hazardous chemical road transportation accidents            作者: <b>Jiangle Wu</b>, Yi Lu, Shiliang Shi, Rongyi Zhou, Yong Liu            单位: Hunan University of Science and Technology</p>
10:30-10:50	<p>题目: Heat transfer and spread characteristics of continuous ethanol spill fires on sand substrates            作者: <b>Haihang Li</b>, Zhenlin Li, Qiang Wang, Fei Tang            单位: China Jiliang University</p>	<p>题目: Experimental study on overpressure dynamics and flame behavior induced by the transformer oil explosion            作者: <b>Hongsheng Ma</b>, Zhiyu Liu, Changjian Wang, Jaqing Zhang, Yubiao Huang            单位: Hefei University of Technology</p>	<p>题目: Scenario construction and emergency decision of hazardous chemical disaster based on stochastic petri net and case based reasoning            作者: <b>Xunqing Wang</b>, YuJie Zhou, XiaoYu Sun            单位: Shandong Technology and Business University</p>
10:50-11:10	<p>题目: Simulation study of oil</p>	<p>题目: Flammability characteristics</p>	<p>题目: Numerical simulation of</p>

	<p>pressure problems caused by internal faults in oil-immersed transformers</p> <p>作者: Haowei Yao, <b>Kefeng Lv</b>, Mengyang Xing, YouXin Li, Zhongbin Lv, Dong Wang, Zhenyu Zhan, Zhenyu Wang, Wei Ren</p> <p>单位: Zhengzhou University of Light Industry</p>	<p>of wind turbine blades</p> <p>作者: <b>Ziyan Cheng</b>, Fei You, Yu Zhang, Zhenhua Wang, Chenhao Zhuang, Zhengmin Wang, Guilin Ling, Yu Pan, Junqi Wang, Jing Ma</p> <p>单位: Nanjing Tech University</p>	<p>heating temperature field of adiabatic acceleration calorimeter based on ANSYS Workbench</p> <p>作者: <b>Tianyi Yan</b>, Lei Ni, Liang Yin, Juncheng Jiang, Botao Tang, Miao Fei</p> <p>单位: Nanjing Tech University</p>
11:10-11:30	<p>题目: Pyrolysis behaviors of di-tert-butyl peroxide in gas and liquid phases: A ReaxFF molecular dynamics simulation</p> <p>作者: <b>Xianghui Shi</b>, Xin Zhang, Yong Pan</p> <p>单位: Nanjing Tech University</p>	<p>题目: Experimental study on the temperature distribution of cryogenic hydrogen jet flame on the barrier wall</p> <p>作者: Liang Gong, <b>Yifei Han</b>, Xianwen Zheng, Haoyu Wang, Yongzheng Yao, Yuchun Zhang</p> <p>单位: Southwest Jiaotong University</p>	<p>题目: Study on optimization of shelter locations and evacuation routes of gas leakage accidents in chemical industrial park</p> <p>作者: <b>Di Zhang</b>, Zhanli Mao, Meiling Gong, Jianxing Ren, Songtao Zuo</p> <p>单位: China People's Police University</p>
11:30-11:50	<p>题目: Research on flexible suppression method for explosion based on energy absorption and buffering</p> <p>作者: <b>Yajun Wang</b>, Huihuan Ma, Han Li, Xiuyan Xu</p> <p>单位: Heilongjiang University of Science and Technology</p>	<p>题目: Numerical simulation study on high-pressure hydrogen spontaneous ignition in the two types of corner structure</p> <p>作者: <b>Guanghu Wang</b>, Xiaodan Xu, Juncheng Jiang, Yuying Zhang, Lei Ni</p> <p>单位: Nanjing Tech University</p>	<p>题目: Experimental research on the effect of wire mesh on the flame propagation characteristics of syngas explosion</p> <p>作者: <b>Zhi Wang</b>, Xingyan Cao, Haoyue Wei, Yangqing Zhou, Shaochen Sun</p> <p>单位: Nanjing Tech University</p>
11:50-12:10	<p>题目: Risk assessment and control of urban industrial safety based on risk quantification</p> <p>作者: Zhang Yufu</p> <p>单位: Zhongan Guangyuan Testing and Evaluation Technology Service Co., Ltd. (中安广源检测评价技术服务股份有限公司)</p>	<p>题目: Practice and Case Studies of an Intelligent Chemical Safety Risk Control Platform Based on Industrial Internet</p> <p>作者: Wang Sanming</p> <p>单位: Anyuan Technology Co., Ltd. (安元科技股份有限公司)</p>	<p>题目: Discussion on the grading principle of Security Integrity Level (SIL)</p> <p>作者: Huang Jiulai, Xiamen Xibaoyuan Technology Group Co., LTD</p> <p>单位: Xiamen Xibaoyuan Technology Group Co., LTD. (厦门熙宝源科技集团有限公司)</p>

时间 /Time	12月04日下午 PM, 04 December (UTC+08)		
分论坛报告 Sub-Forum Speech			
14:00-15:40	<b>人员安全与安全文化</b> <b>Human Safety and Safety Culture</b> 主持人: 高云骥、龚俊辉 <b>Host: Yunji Gao, Junhui Gong</b> 腾讯会议 Tencent ID: 469-570-456 密码 Passcode: 221204	<b>消防安全</b> <b>Fire Safety</b> 主持人: 赵金龙、曹兴岩 <b>Host: Jinlong Zhao, Xingyan Cao</b> 腾讯会议 Tencent ID: 418-466-899 密码 Passcode: 221204	<b>工业过程安全</b> <b>Industrial Process Safety</b> 主持人: 王彦富、张明广 <b>Host: Yanfu Wang, Mingguang Zhang</b> 腾讯会议 Tencent ID: 843-166-679 密码 Passcode: 221204
14:00-14:20	题目: Multi-vessel collision risk analysis based on conflict detection algorithm 作者: Yanfu Wang, <b>Erhua Cui</b> , Miaomiao Wang, Kun Wang. 单位: China University of Petroleum	题目: Study of crack generation and expansion behavior of Frame-Supported float glass after heat exposure 作者: Yanni Zhang, <b>Luoxin Huang</b> , Jun Deng, Zhichao Feng, Xinyu Wen, Dan Yang, Shiyue Ling 单位: Xi'an University of Science and Technology	题目: Experimental study on the flame length and flame pulsation behaviors of continuous spill fires on a water surface 作者: Jinlong Zhao, <b>Guangheng Song</b> , Qingyuan Zhang, Xinjiang Li, Hong Huang, Jianping Zhang 单位: China University of Mining and Technology-Beijing
14:20-14:40	题目: Simulation of safety competency improvement strategy for construction workers based on system dynamics 作者: Lianhua Cheng, <b>Xudong Zhao</b> , Junsheng Shi, Dongqiang Cao 单位: Xi'an University of Science and Technology	题目: Study on Fire Simulation of Air-supported Membrane Structures Considering Pyrolysis of Lap Welded Seams 作者: <b>Yang Yu</b> , Ying Sun, Zhenggang Cao, Tengfei Wang 单位: North China Institute of Science and Technology	题目: Risk assessment of lithium-ion battery road transportation based on data-driven Bayesian networks —— considering battery self-heating 作者: <b>Jiapeng Li</b> , Jinghong Wang, Jun Xie, Juncheng Jiang 单位: Nanjing Tech University
14:40-15:00	题目: Safety management of schools in China from a macro perspective: Continuity, change and solutions 作者: Ruipeng Tong, <b>Ninghao Sun</b> , Shiji Gong, Jianting Yao, Dachen Lei, Ziqi Li 单位: China University of Mining and Technology-Beijing	题目: Experimental investigation of wind effects on heat transfer and fire spread across a pine needle fuel bed 作者: <b>Hanwen Guo</b> , Dong Xiang, Linyi Kong, Yunji Gao, Yuchun Zhang 单位: Southwest Jiaotong University	题目: Experimental research on merge characteristics and burning rate of annular pool fires under crosswinds 作者: <b>Yixiang Zhang</b> , Jianlu Zhu, Yuxing Li 单位: Xi'an Shiyong University
15:00-15:20	题目: A PLS-SEM-based study of emergency effectiveness behaviour in mines	题目: Influence of radiation mode and intensity on the protective performance of firefighting boots	题目: Study on the dynamic response characteristics of gas explosion on interlayer airtight

	作者: <b>Yawen Liu</b> , Jingxu Chen, Yejiao Liu, Yuhui Ren, Yongdan Cao 单位: Inner Mongolia University of Science and Technology	作者: <b>Jiao Geng</b> , Song Guo, Ziwen Cao, Zi Wang, Weiqing Peng 单位: Nanjing University of Science and Technology	walls in complex roadway 作者: Jianwei Cheng, Zui Wang, <b>Zhiyuan Ma</b> , Gao Ke, Junhong Si, Yi Qin, Xincheng Hu 单位: China University of Mining and Technology
15:20-15:40	题目: Driving mechanism revelation and efficiency sustainability evaluation of workers' well-being promotion: A new insight based on DPSIR-DEA model 作者: <b>Xiaofeng Zhou</b> , Ninghao Sun, Leyao Wang, Qian Wang, Ruipeng Tong 单位: China University of Mining and Technology-Beijing	题目: Preparation of microencapsulated nitrogen-phosphorus-silicon synergistic flame retardant and its effect on high impact polystyrene flame retardancy 作者: <b>Xiaoyan Sun</b> , Wangxing Lu, Huimin Liu, Ru Zhou, Lian X. Liu, Juncheng Jiang 单位: Nanjing Tech University	题目: A Review of Progress in High Flash Point Liquid Spray Fire Explosion Research 作者: <b>Yuxing Tian</b> , Gang Tao, Lijing Zhang 单位: Nanjing Tech University
15:40-16:00	<b>闭幕式 Closing Ceremony</b> 主持人: 潘勇 教授 南京工业大学 <b>Host: Prof. Yong Pan, Nanjing Tech University</b> 腾讯会议 Tencent ID: 701-896-125 密码 Passcode: 221204		
15:40-15:50	优秀论文表彰 Excellent Paper Award		
15:50-16:00	大会闭幕		

## 六、特邀报告人简介

特邀报告：城市韧性：理念与进展

**Plenary Speech: Urban resilience: concept and some progress**



**范维澄**，清华大学公共安全研究院院长、教授，中国工程院院士，英国拉夫堡大学名誉博士。现任国家减灾委专家委委员、住建部城市建设防灾减灾专家委员会主任、国家自然科学基金委"非常规突发事件应急管理研究"重大研究计划指导专家组组长、国务院学位委员会"安全科学与工程"学科评议组召集人、"安全工程"专业学位教育协作组组长、（中国）公共安全科学技术学会理事长、中国安全生产协会副会长、亚太公共安全科学技术学会主席。主要研究领域：公共安全的风险评估、监测监控、预测预警、决策支持、应急管理的理论与技术及其综合集成；火灾动力学演化与防治技术。获国家科技进步一等奖 1 次，二等奖 2 次；国家级教学成果一、二等奖各 1 次；获授权发明专利 12 项，其中中国专利金奖 1 项；获国家重点实验室计划十周年与二十周年先进工作者金牛奖；全国五一劳动奖章；亚澳火灾科学技术学会首届终生成就奖。

**Weicheng Fan**, Professor and Director of Institute of Public Safety, Tsinghua University; Member of Chinese Academy of Engineering; Honorary Doctor in Loughborough University. He is currently a member of the expert committee of the National Committee on Disaster Reduction, director of the Urban Construction Disaster Prevention and Reduction Expert Committee of the Ministry of Housing and Urban Rural Development, the leader of the leading expert group for the major research plan of the National Natural Science Foundation of China on "unconventional emergency management research", the convener of the "safety science and engineering" discipline review group of the Academic Degrees Committee of the State Council, the leader of the "safety engineering" professional degree education collaboration group, the chairman of the (China) Society of Public Safety Science and Technology Vice President of China Association of Work Safety, President of Asia Pacific Society for Public Safety Science and Technology. Main research fields: risk assessment, monitoring, prediction and early warning, decision support, theory and technology of emergency management and their comprehensive integration of public security; Fire dynamics evolution and prevention technology. He won the first prize and second prize of the National Science and Technology Progress Award once and twice; respectively. One first

prize and one second prize of national teaching achievement; 12 authorized invention patents, including 1 China Patent Gold Award; Won the Golden Bull Award for Advanced Worker of the 10th and 20th Anniversaries of the National Key Laboratory Plan; National May Day Labor Medal; The First Lifelong Achievement Award of the Asia Australia Fire Science and Technology Society.

## 特邀报告：城市燃气管网安全保障技术

### Plenary Speech: Safety Guarantee Technology of City Gas Pipeline Network



**张来斌**，中国工程院院士，中国石油大学（北京）教授，应急管理部油气生产安全与应急技术重点实验室主任，国务院第八届安全科学与工程学科评议组召集人，公共安全科学技术学会副理事长，曾任中国石油大学（北京）校长。

长期从事油气生产系统及装备安全科学与工程理论、方法和技术教学和研究工作，是我国油气安全科学与工程学科的主要创建者。主持 863、自然科学基金重点及企业重大项目多项。获国家科技奖励 4 项，其中以第一完成人或国家技术发明二等奖 2 项，省部级科技进步特等奖 1 项和一等奖多项，出版专著及教材多部，发表论文三百余篇。获国家教学成果二等奖 1 项，省部级教学成果一等奖 2 项。获国际石油工程师协会杰出会员、孙越崎能源大奖、IET-方正大学校长奖、北京市教学名师等荣誉称号。

第十一、十二、十三届全国政协常委，民盟中央常委。教育部安全工程专业教育指导委员会副主任，教育部高等学校专业设置与教学指导委员会委员。中国工程教育认证协会安全类专业认证委员会主任。

**Laibin Zhang**, Academician of Chinese Academy of Engineering, professor of China University of Petroleum (Beijing), director of Key Laboratory of Oil and Gas Production Safety and Emergency Technology of the Emergency Management Department, convener of the 8th Safety Science and Engineering Discipline Review Group of the State Council, vice chairman of the Public Safety Science and Technology Society, and former president of the China University of Petroleum (Beijing). He has been engaged in the teaching and research of the theory, method and technology of oil and gas production system and equipment safety science and engineering for a long time, and is the main founder of the discipline of oil and gas safety science and engineering in China. Presided over a number of 863, NSFC key and enterprise major projects. He has won 4 national science and technology awards, including 2 first prize winners or the second prize of national technology invention, 1 provincial and ministerial science and technology progress award and more than one first prize. He has published many monographs and textbooks, and more than 300 papers. It won one second prize of national teaching achievement and two first prizes of provincial and ministerial teaching achievement. He won the honorary titles of Outstanding Member of the International Association of Petroleum Engineers, Sun



Yueqi Energy Award, IET Founder University President Award, Beijing Famous Teacher, etc. He is a member of the Standing Committee of the 11th, 12th and 13th CPPCC National Committee, and member of the Standing Committee of the Central Committee of the NLD, deputy director of the Safety Engineering Education Steering Committee of the Ministry of Education, and member of the Professional Setting and Teaching Steering Committee of Colleges and Universities of the Ministry of Education. Director of Safety Professional Certification Committee of China Engineering Education Certification Association.

特邀报告：聚焦高层次人才培养，助力高质量发展

**Plenary Speech: Focusing on cultivation of high-level talents to help high-quality development**



**冯长根**，英国工程技术院院士，国际欧亚科学院院士，乌克兰国家科学院外籍院士，北京理工大学教授、博导，英国利兹大学化学学院博士。曾任北京理工大学副校长、首席教授。中国科协书记处原书记、党组成员、副主席，第十一、十二届全国人大常委会委员，第十、十一、十二届全国人大教科文卫委员会委员，国务院学位委员会七届学科评议组安全科学与工程组共同召集人。现任《安全与环境学报》主编。长期从事安全科学与工程、

火工烟火技术和新材料应用研究，在国内外合作或单独发表学术论文 760 余篇，完成重要科研项目多项，包括 973 项目、国家自然科学基金项目、国家科技攻关项目等。学生中获博士学位 96 位、硕士学位 57 位。合作获奖 10 多项。获首届中国青年科技奖、中国青年十大杰出人物、全国“五一”劳动奖章、全国十大杰出职工、全国先进工作者、全国优秀留学回国人员、全国优秀科技工作者等多项荣誉称号。

**Changgen Feng**, professor and doctoral advisor, doctor of the School of Chemistry, University of Leeds, UK, academician of the British Academy of Engineering and Technology, academician of the International Eurasian Academy of Sciences, and foreign academician of the National Academy of Sciences of Ukraine. He used to be the Vice President of Beijing University of Technology, the former Secretary of the Secretariat of the Chinese Association for Science and Technology, a member of the Party Leadership Group and Vice Chairman, a member of the Standing Committee of the Eleventh and Twelfth National People's Congress, a member of the Education, Science, Culture and Health Committees of the Tenth, Eleventh and Twelfth National People's Congress, and a co convener of the Safety, Science and Engineering Group of the Seventh Discipline Review Group of the Academic Degrees Committee of the State Council. He is currently the chief editor of the Journal of Safety and Environment and Defense Technology. He has been engaged in safety science and engineering, pyrotechnic technology and new material application research for a long time, and has published more than 600 academic papers in cooperation or independently at home and abroad. He has completed a number of important scientific research projects, including 973 projects, National Natural Science Foundation projects, national science and technology research projects, etc. He has won the first China

Youth Science and Technology Award, the top ten outstanding figures of Chinese youth, the National May Day Labor Medal, the top ten outstanding workers, the national advanced workers, the national outstanding returned overseas students, the national outstanding scientific and technological workers and other awards and honorary titles.

## 特邀报告：热分析技术在锂电池安全测试中的应用

### Plenary Speech: Application of thermal analysis technology in safety test of lithium battery



**Chi-Min Shu**, Distinguished Chair Professor and Center Director, Department of Safety, Health, and Environmental Engineering, Yunlin University of Science and Technology, Taiwan, China. His main research fields include green material safety, intelligent monitoring, runaway reaction, quantitative risk assessment, prevention and mitigation on fire and explosion, storage and transportation safety, and lithium-ion battery safety. In 2012, he received the “Chemical Technology Award” from Taiwan Institute of Chemical Engineers, the highest honor of the Taiwan chemical industry. In 2007 and 2010, he won the Academic Research Achievement Award of Yunlin University of Science and Technology. In 2014, he obtained the Industry-University Cooperation Achievement Award of Taiwan Yunlin University of Science and Technology. In 2017, he became the first scholar in Taiwan to receive the Mettler-Toledo Award, the first annual award in the field of thermal analysis in North America. In 2019, he was granted the Outstanding Research Award of Taiwan Ministry of Science and Technology. In 2021, he was the recipient of Trevor Kletz Merit Award (this award is the first prize for chemical safety internationally, and Professor Shu is also the second winner in Asia) and the National Award for Distinguished Contribution to Industry-Academic Cooperation. In 2022, he won the Outstanding Engineer Award of Chinese Institute of Engineers. He has published 524 international journals (SCI including more than 90 TOP journals in different fields), and was honored as a fellow of NATAS, AIChE, RSC, IET, IChemE, and TwICChE in 2011, 2016, 2018, 2019, 2021, and 2022, respectively.

#### 报告摘要 **Abstract:**

Lithium-ion batteries have opened a new chapter with their numerous advantages. However, concerted efforts are still underway on the battery’s development. Without a doubt, however, the safety issue is front and center for consideration. Inert gases are prevalently used to decrease substances’ activities and minimize the probability of an unexpected reaction. To determine the relationship between inert gases and lithium-ion battery runaway reaction, we used calorimetry, such as vent sizing package 2 (VSP2), as pseudo-adiabatic conditions with distinctive test cell which

allowed recording the voltage and the temperature variation with the time track.

Meanwhile, the system was imported with different gases, such as air, nitrogen, and argon, and multiple atmospheres were created for runaway reaction assessment. The output data, such as the curve of voltage versus temperature combined with a variety of thermal stability parameters, apparent exothermic onset temperature ( $T_0$ ), self-heating rate ( $dT/dt$ ), and pressure rise rate ( $dP/dt$ ), can exhibit the situation that inert gases mitigate the impact of a runaway reaction. The gases collected from a test cell with multiple temperatures can be future applied by analyzing with gas chromatography-mass spectrometry and the thermal runaway mechanisms could be elucidated comprehensively.

## 特邀报告：密闭空间 CO 产物的原位同步消纳方法研究

### Plenary Speech: Study on in situ Synchronous Absorption of CO in Confined Space



**周福宝**，工学博士，教授，中共党员。现任中国安全生产科学研究院党委副书记、院长。国家安全生产专家组专家。兼任国务院学位委员会第八届安全科学与工程学科评议组联合召集人，中国消防协会城市轨道交通消防安全专业委员会主任，中国煤炭工业技术委员会煤矿通风与安全专家委员会副主任等。曾获长江学者特聘教授、百千万人才工程国家级人选、国家有突出贡献的中青年专家、科学探索奖、何梁何利科学与技术奖、中国工程院光华工程科技青年奖、中国青年科技奖等人才奖项。

长期从事矿山灾害防治与资源化利用、公共安全与职业健康等方面的科学研究与人才培养工作。主持完成国家重点研发计划项目、国家杰出青年科学基金、国家自然科学基金重点项目、国家 111 学科创新引智基地、教育部创新团队发展计划等科研项目 30 余项，研究成果在国内外数百座矿山、隧道工程等领域直接转化应用。近年来获国家技术发明二等奖 1 项、国家科技进步二等奖 3 项及省部级科技进步一等奖 5 项，获授权国家发明专利 80 余件、软件著作权 4 件；出版学术专著 2 部，主编教材 2 部；曾任第十一届世界矿山通风大会组委会副主席、第三十五届国际匹兹堡煤炭会议燃烧分会主席等。在 *Journal of Hazardous Materials*、*煤炭学报* 等国内外重要学术刊物上发表论文 100 余篇，2017 年后连续入选 Elsevier 在安全、风险、可靠性和质量学科领域的中国高被引学者。

**Fubao Zhou**, Doctor of Engineering, Professor, CPC member. He is now the Deputy Secretary of the Party Committee and President of the Chinese Academy of Work Safety Sciences. Experts of the National Work Safety Expert Group. He also served as the co convener of the 8th Safety Science and Engineering Discipline Review Group of the Academic Degrees Committee of the State Council, the director of the regional rail transit fire safety professional committee of the China Fire Protection Association, and the deputy director of the coal mine ventilation and safety expert committee of the China Coal Industry Technical Committee. He has won many talent awards, such as Changjiang Scholars Distinguished Award, National Candidate for the Hundred Thousand Talents Project, National Young and Middle aged Experts with Outstanding Contributions, Science Exploration Award, He Liang He Li Science and Technology Award, Guanghua Engineering Science and Technology Youth Award of the Chinese Academy of Engineering, and China Youth Science and Technology Award. He has been

engaged in scientific research and talent training in mine disaster prevention and resource utilization, public safety and occupational health for a long time. He has presided over and completed more than 30 scientific research projects, including national key research and development projects, National Science Fund for Distinguished Young Scholars, National Natural Science Fund key projects, National 111 Discipline Innovation and Talent Introduction Base, and the innovation team development plan of the Ministry of Education. The research achievements have been directly transformed and applied in hundreds of mines, tunnel projects and other fields at home and abroad.

特邀报告：有限空间环保无压温敏微胶囊灭火技术

**Plenary Speech: Fire extinguishing technology of environmental friendly and non-pressure temperature sensitive microcapsules in limited space**



邓军，教授，博士生导师。西安科技大学副校长。国务院学位委员会安全科学与工程学科评议组成员，“万人计划”科技创新领军人才、中国青年科技奖获得者，全国先进工作者，教育部创新团队带头人，兼任陕西煤火灾害防治重点实验室和西部煤矿安全教育部工程中心主任，国家安全生产专家。主要从事煤火科学与防治、城市安全与智慧消防和应急救援等科学问题等展开研究。承担国家科技研发计划重点专项课题、国家自然科学基金等国家级项目 20 余项。获国家、省部级科技进步奖 20 余项，国家发明专利 20 余项。

专利 20 余项。

**Jun Deng**, professor, doctoral supervisor. Vice President of Xi'an University of Science and Technology. Member of the Safety Science and Engineering Discipline Evaluation Group of the Academic Degrees Committee of the State Council, leader of scientific and technological innovation of the "Ten Thousand Talents Plan", winner of the China Youth Science and Technology Award, national advanced worker, leader of the innovation team of the Ministry of Education, and concurrently director of the Shaanxi Key Laboratory for Coal Fire Disaster Prevention and Control, the Engineering Center of the Western Coal Mine Safety Education Ministry, and national safety production expert. Mainly engaged in research on scientific issues such as coal fire science and prevention, urban safety and intelligent fire protection, and emergency rescue. It has undertaken more than 20 national level projects such as key special projects of the National Science and Technology Research and Development Plan and the National Natural Science Foundation of China. It has won more than 20 national, provincial and ministerial science and technology progress awards and more than 20 national invention patents.



## 特邀报告：工业和社区的未來安全挑战

### Plenary Speech: The future safety challenges both for industry and communities



**Dr. Hans Pasman** is TEES Research Professor at Mary Kay O'Connor Process Safety Center of the Artie McFerrin Department of Chemical Engineering of Texas A&M University, and he is Emeritus Professor Chemical Risk Management of the Delft University of Technology in the Netherlands. He graduated in chemical technology

at Delft University of Technology in 1961, with Ph.D. in 1964 while employed by Shell. He joined the Dutch organization for Applied Research, TNO, where he did or led many investigations into disastrous industrial accidents, he initiated and led research in reactive materials, explosions of all types, and risk analysis. Until 2003 he managed in various directing capacities Dutch defense research and coordinated process safety research at various discipline groups in TNO. He was chairman of the International Group on Unstable Substances for 10 years, the European Study Group on Risk Analysis (1980-1985), a NATO Group on Explosives, and the Working Party on Loss Prevention and Safety Promotion in the Process Industries (1986-2004) and in this latter capacity in 1992 co-founder of the European Process Safety Centre. From 1998 till 2008 he taught and researched process safety at the Delft University of Technology He has been member of the Dutch governmental Council of Hazardous Substances (2004-2012). He received various awards, presented numerous lectures and was author or co-author of many papers.

#### 报告摘要Abstract:

To save human life on planet earth, an energy transition from coal and fossil fuel to renewables will be imperative. The decarbonization requires use of energy from the sun converted to electrical power. Temporarily, electrical power from nuclear fission will also serve the goal until fusion becomes available. Because electrical energy storage is problematic and due to material cost problematic, part of the power generated will be converted to hydrogen, which is storable, albeit it has limitations as well. Hydrogen will be a crucial raw material for various chemical processes, e.g., nitrogen binding to ammonia for fertilizers and other, a fuel for heavy transport and machines, and a fuel for domestic use, perhaps temporarily mixed with natural gas. Many chemical processes will be driven by electrical power, while also cars will make large-scale use of this. It will all require

large investments. In addition, safety must be examined. Hydrogen has hazardous properties and high voltage and currents handling requires skill and competence. Undoubtedly, industry will train its workers for safe working, which still does not fully guarantee safety, but the largest risk is the “popularization” of the technology in urban areas. Ignorance and less competent people working with hydrogen and electrical power may cause small and larger accidents, repelling the use of new technologies.

The lecture will provide an overview of technologies and interdependencies, it will briefly review hydrogen properties, it will mention new devices that will be in use in large numbers, such as electrolyzers, fuel cells, and batteries and associated hazards, and will stress the weakness of hazard identification methods, which is already known to be present at traditional equipment and human factor, and which in case of fully new devices certainly will produce unpleasant surprises.

特邀报告：杂化复合氧化物与碳纳米流体

**Plenary Speech: Hybrid and composite oxide and carbon nanofluids**



**Dr. Imre Miklós Szilágyi** is an associate professor at the Budapest University of Technology and Economics (BME), Department of Inorganic and Analytical Chemistry. He is the head of the Materials Science Analysis Research Group, which is an international group of 15-20 PhD, MSc and BSc students, while postdocs, visiting scientists show up often as well. His research areas are materials science, nanotechnology, thermal science, spectroscopy and analytical chemistry with a strong emphasis on environmental and especially solar applications.

Besides academic work, he is doing industrial research frequently for various companies.

He has obtained various awards and recognitions, e.g. Young Scientist Award of the Hungarian Academy of Sciences (2010); and of the V4 Academies (2010); European Materials Research Society – Graduate Student Award (2009); Main prize of the Scopus Young Researcher Awards (2008, Hungary); Perkin-Elmer – ICTAC (International Confederation of Thermal Analysis and Calorimetry) Young Scientist Award (2008).

He is the Editor-in-Chief of the Journal of Thermal Analysis and Calorimetry (Springer Nature and Akadémiai Kiadó, IF 4.755, Q1 in Analytical Chemistry and Thermodynamics).

**报告摘要 Abstract:**

Heat exchangers are widely used in many energy related engineering applications, such as solar collectors, chemical industry, power production, waste heat recovery, air conditioning, automobile radiators and refrigeration. Although various techniques have been applied to enhance heat transfer, their performances are often limited by the low thermal conductivities of the heat transfer fluids. It has been proved that the dispersion of small amounts of nano-sized solid nanoparticles in base fluids enhance thermal conductivity. Nanofluids as a stable colloidal suspension are prepared by dispersing nanoparticles in base fluids to improve the thermal performance of heat transfer systems.

In this lecture, the thermal conductivity and viscosity of various single phase, hybrid and composite oxide and carbon nanofluids are presented. As solid nanomaterials for single phase nanofluids, halloysite nanotubes, SiO<sub>2</sub> and TiO<sub>2</sub> nanoparticles, carbon nanospheres and carbon

nanopowders were used. For hybrid nanofluids, SiO<sub>2</sub>-TiO<sub>2</sub> were applied. For the first time, core/shell nanomaterials obtained by atomic layer deposition (ALD) were also tried to increase the thermal conductivity of nanofluids. The hybrid nanofluids were better in performance compared to the single phase ones. However, the ALD prepared core/shell ones were even more beneficial, which opens up a new way to obtain novel, beyond the state-of-the-art nanofluids.

## 特邀报告：数字化处理系统领域的安全

### Plenary Speech: Safety in Digitalized Processing Systems



**Dr. Faisal Khan** is Mike O'Connor II Chair Professor and Director of Mary Kay O'Connor Process Safety Center, Texas A&M University, College Station, Texas. He is also Director (Technical) of Ocean Energy Safety Institute (OESI), a US Department of Energy and US Department of Interior funded applied R&D initiative.

Dr. Khan is a former Professor and Canada Research Chair (Tier I) of Offshore Safety and Risk Engineering at the Memorial University of Newfoundland, Canada. He is the founder of the Centre for Risk Integrity and Safety and Engineering, which was home of 100+ research members during his time at Memorial University. His research interests include offshore safety, drilling safety, extreme event modeling, asset integrity, and risk engineering. He is the recipient of many National and International Awards. He is actively involved with multinational energy and processing industries on the issue of safety, risk, and asset integrity. He is a Fellow of the Canadian Academy of Engineers. He has authored over 500 research articles in peer-reviewed journals and mentored 75 PhDs and 85 master students. He is Editor-in-Chief of the Journal of Process Safety & Environmental Protection and Journal of Safety in Harsh Environments.

#### 报告摘要 **Abstract:**

While efforts to use digital solutions in process operations are gaining wider acceptance, there are serious safety concerns that need to be addressed when adopting digitalization. Safety issues have also evolved with digitalization, from simple equipment failure to failure of process systems (equipment with electronic systems), monitoring and control systems, data encryption systems, and most recently, software systems. How these evolving process safety issues are understood and addressed will govern the overall safety of process facilities. Therefore, proactively converting this challenge to opportunity and developing digital process safety solutions more holistically. Dynamic risk management is one approach to address this challenge. The concept of creating a dynamic risk profile for a processing system encompasses the likelihood and consequences of a given abnormal event. Dynamic risk estimation uses Bayesian theory to update the probability of an event occurrence and a generalized consequence algorithm to obtain the given event's relative

consequences. This approach results in a risk function with predictive capabilities and the ability to be updated with time. This talk also touches on system advances from a digitalization perspective and the dynamic risk management approach's details.

特邀报告：金属有机骨架化合物在塑料阻燃技术中的应用研究

**Plenary Speech: Development of Flame Retardant Technology for Plastics using Metal-Organic Frameworks**



**Dr. Qingsheng Wang** is a tenured professor and George Armistead '23 Faculty Fellow in the Artie McFerrin Department of Chemical Engineering at Texas A&M University. He was Dale F. Janes Endowed Professor and Department Head at Oklahoma State University before returning to TAMU in 2019. Dr. Wang received his BS and MS in Chemistry at Zhejiang University and PhD in Chemical Engineering at TAMU under supervision of late Sam Mannan. He has nearly 20 years of work and research experience in process safety, chemical engineering, and chemistry. Dr. Wang has published over 165 journal papers, 9 book chapters, 1 book, and 2 patents. Dr. Wang is currently leading TAMU Multiscale Process Safety Lab, pioneered in the areas of flame-retardant polymers, fire & explosion dynamics, machine learning, and composites manufacturing.

**报告摘要 Abstract:**

Polymeric materials present wide applications in daily life and promising perspectives in the future market because of their unique properties of lightweight and chemical resistance. However, one significant drawback is the high flammability of many synthetic polymers due to their energy-dense hydrocarbon-based chemical structures. Therefore, improving the flame retardancy of polymeric materials is an increasingly important strategy to limit exposure to fire hazards. Since halogen-based retardants are under strictly environmental scrutiny, intumescent flame retardant (IFR) is halogen-free with low costs, thus resulting in increased demand from industry. In this talk, I will discuss our recent successes in investigating MOFs as a competitive candidate on synergistically improving the flame retardancy behaviors of conventional IFR-based polymer composites, including vertical burning rating, LOI value, heat and toxicity release. Considering the limited manufacture efficiency and large volumes of required solvent in the MOF synthesis, we further proposed a sustainable and efficient manufacturing of MOFs-based polymer nanocomposites by reactive extrusion. Our approach also informs machine-learning strategies for building up flame

retardancy database from available literatures and predicting the corresponding flammability. We hope that these advances will pave the way for rational design and manufacturing of novel sustainable flame retardant nanocomposites.



特邀报告：低概率/高后果事件：预测和预防

**Plenary Speech: Low Probability/High Consequence Incidents: Prediction and Prevention**



**Dr. Paul Amyotte, P.Eng.** is a Distinguished Research Professor and Professor of Chemical Engineering at Dalhousie University (Halifax, Canada), where he held the C.D. Howe Chair in Process Safety from 2011-2020. He is a chemical engineering graduate of the Royal Military College of Canada (Bachelor's), Queen's University (Master's), and the Technical University of Nova Scotia (PhD). He is a registered professional engineer in Nova Scotia.

Dr. Amyotte has an extensive record of authorship, with six books, nine book chapters, and over 350 papers published in peer-reviewed journals or presented at national and international conferences. He has presented invited plenary lectures at symposia in Canada, France, Italy, Malaysia, Netherlands, Norway, Poland, Qatar, Taiwan, and the United States. He is the current editor of the Journal of Loss Prevention in the Process Industries, and a past-president of the Canadian Society for Chemical Engineering, Engineers Nova Scotia, and Engineers Canada. In 2019, he was presented with the Sovereign's Medal for Volunteers by the Governor General of Canada.

Dr. Amyotte has consulted on numerous industrial projects involving hazard analysis, incident investigation, and material explosibility. He has also served as an expert witness in the proceedings related to two coal mine disasters: Westray in Nova Scotia and Upper Big Branch in West Virginia. In June 2014, he received the Cybulski Medal from the Polish Academy of Sciences for significant and sustained contributions to the field of dust explosion research. In October 2014, Dr. Amyotte received the Trevor Kletz Merit Award from the Mary Kay O'Connor Process Safety Center, Texas A&M University, for significant contributions to the advancement of education, research, and service activities related to process safety. He was presented with the 2017 Process Safety Management Award by the Canadian Society for Chemical Engineering for outstanding contributions in Canada to process safety and loss management.

**报告摘要 Abstract:**

A low probability/high consequence (LPHC) event can be defined in many ways, whether by

fatalities, property loss, production loss, environmental harm, or financial loss (or some combination thereof). This presentation examines LPHC incidents, their associated warning signs, and how these warning signs can be detected. The Center for Chemical Process Safety provides guidance that warning signs can occur in any of the following areas of an organization: leadership and culture, training and competency, process safety information, procedures, asset integrity, risk analysis and management of change, audits, and learning from experience. There are currently many tools available for process safety assurance, including: process hazard analysis (PHA), Quantitative Risk Assessment (QRA), layer of protection analysis (LOPA) and Bayesian networks. While these methodologies can help detect process incident warning signs, it is imperative that warning sign detection and incident prevention methods be fully integrated into the process safety management (PSM) system. Key in this endeavor is effective knowledge management to facilitate heightened risk awareness leading to the prevention of LPHC occurrences. By beginning at the individual level, the result will be improvements in the PSM system itself, the promotion of a culture of safety, the creation of inherently safer designs, and the implementation of an effective communication/training system. The underlying thesis of the presentation is that if a collection of small warnings in the workplace are not properly heeded, the low probability of a high consequence event occurring may become a severe reality.

## **Keynote Speech: Status and Challenges of 3D CFD Simulations of Large-scale Gaseous Dispersions and Explosions**



**Jianjun Xiao** obtained his Ph.D. at Tsinghua University in 2006. He joined Karlsruhe Institute of Technology (KIT) in Germany as a scientific fellow in 2006, and obtained his tenure track position at KIT in 2012. He is the principle scientist of numerical safety analysis in the Hydrogen Group at KIT. His research interests include Computational Fluid Dynamics, combustion, heat and mass transfer, and two-phase flow. He is a recognized expert in numerical modeling, CFD simulation, safety of explosive gases, and quantitative risk assessment. He is leading the development of 3D high-performance scientific computing software GASFLOW (<https://www.gasflow-mpi.com>), and promoting its' applications to the real-world industrial-scale problems.

### **报告摘要 Abstract:**

Computational Fluid Dynamics (CFD) methods have been widely used in the safety analysis of flammable gas release, dispersion, mixing and explosion. However, most of the studies focused on single or relatively simple physical phenomena in small-scale geometries. CFD simulations of gas mixing, dispersion and explosion in industrial-scale applications are often considered to be “colorful” and “fake”. In my opinion, It is mainly because the involved complicated physics in large-scale complex geometries are far beyond the capabilities and validity domains of the models and solution algorithms in the applied CFD codes. The limited computing power also makes the physics under-resolved due to the very coarse mesh used in the simulation.

In this talk, I will discuss the simulation capability requirements for industrial-scale gas dispersion, mixing and explosion including unified numerical solver for flows at broad Mach number, turbulence modeling, combustion modeling, conjugate heat and mass modeling, unique engineering models for industrial applications and high-performance computing. I will give an overview about the status of research on large-scale gas dispersion and explosion at Karlsruhe Institute of Technology. The gaps, challenges and our plan for the future work will be also discussed.

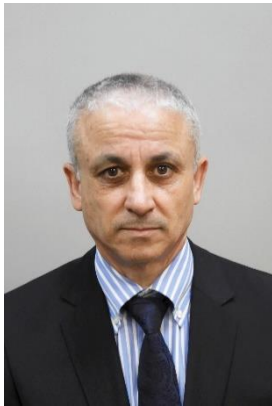
Although from the academic point of view many issues cannot be solved in the near future, scientific-based, well-validated and reliable CFD code can be still very valuable in the industrial-scale applications due to the following reasons: 1) it tackles physical phenomena and parameters that are difficult to observe and measure in the experiments of large-scale gas distribution and explosion; 2) it gives in-depth understanding of the physics involved in the explosive gas safety analysis; and 3) it provides an economical and efficient way to explore and optimize the design of the risk mitigation system in industries involving flammable gases.

**主题报告： A View on the Fire Escape Code: A Hong Kong Perspective**



**Dr. Siuming Lo** is a professor at the Department of Architecture and Civil Engineering. He received his PhD in architecture from the University of Hong Kong. He is an Authorized Person registered in the Hong Kong Buildings Ordinance. His research interests are mainly in urban planning, construction project management, fire safety engineering, fire risk analysis, etc. He has published more than 190 SCI/SSCI journal articles, and been awarded more than 15 Hong Kong Research Grant Council grants. He is a panel member of the Engineering Panel, Hong Kong Research Grant Council.

主题报告: **Digital twins and risks - some applications in crowd evacuation Ahmed Mebarki**



**Dr. Ahmed MEBARKI** is the full Professor of Université Gustave Eiffel, high-level talent flexible introduction professor of Nanjing Tech University, and the Director of IUT of Université Gustave Eiffel. His main research works are devoted to Natural and Technological Risks: industrial hazards (explosions, impacts) & natural hazards (earthquakes, tsunamis, floods); vulnerability and fragility (buildings, and industrial tanks); optimal risks and layouts; cascading and domino effects; Digital twins and Guided crowd evacuation; risk and resilience. He has coordinated several academic and scientific projects in coordination with industrial and academic partners, mainly in: Asia (China, Japan), Europe (France, Germany, Greece), Africa (Algeria), America (USA, Venezuela). In recent years, he has also been developing new theories about risk and resilience in complex systems.

## 主题报告：Are Prevailing Approaches for Engineering Structures to Resist Fire Fit for Purpose?



**Usmani Asif Sohail** (BE, MS, PhD, CEng, FIStructE)

Chair Professor of Building Science and Fire Safety Engineering

Head of the Department of Buildings Environment and Energy

Engineering

Faculty of Construction and Environment

Hong Kong Polytechnic University

Professor Usmani joined Hong Kong Polytechnic University in August 2016. He Professor of Structural Engineering and Computational Mechanics at the University of Edinburgh (until Sept 2015). His research in fire safety engineering has focussed on understanding the thermo-mechanical behaviour of structures in real fires using computational methods validated with experiments. Key achievements include: providing fresh insights to understand non-intuitive structural behaviour observed in full-scale fire tests on a steel-frame composite building at Cardington (UK) during the mid-1990s; explaining the collapse of WTC Twin Towers; proposing and leading research on a distributed real-time emergency response system, FireGrid, demonstrated successfully in London in 2010 (subject of a BBC Horizon documentary); His current research interests include: Development of computational tools for integrated simulation of structures subjected to fire based on open-source software framework OpenSees; Characterisation of fire loading in large open-plan compartments and accidental bridge fires in the context of performance based engineering for structural fire resistance; progressive collapse simulation of tall building under multiple-floor fires; and developing AI-based tools for smart firefighting building on the work of the FireGrid project in UK. This is currently Professor Usmani's primary research focus, as he is leading an RGC TRS funded 33.333 Million HK\$ project "SureFire: Smart Urban Resilience and Firefighting" (2020-2024).

### 报告摘要 Abstract:

Structural performance under loading is closely associated with the material used in its construction. The choice of material for a project depends on many factors, such as cost, climate, durability, availability, sustainability, maintenance, aesthetics and indeed performance under

loading and other environmental influences and extreme events such as fire. Structural steel and concrete are the two most common construction materials for most large building projects. Ever since the high profile collapses of three steel framed tall buildings in the September 11, 2001 terrorist attack in New York a perception has developed that steel structures may suffer from a greater vulnerability to fire. This presentation will systematically examine the comparative merits and demerits of these two materials in the context of their behaviour when exposed to high temperatures and how does that behaviour influence the performance of structural members and structural systems built using these materials. It will be shown that while material behaviour in fire is important, it is misleading to consider it the only significant factor that determines overall structural performance and response to fire or in some cases even most significant factor. Furthermore, temperature dependent strength and stiffness properties of materials dominate most studies of material and structural behaviour in fire, which is also somewhat misleading. The deformation of materials upon heating (usually thermal expansion but sometimes contraction, such as in the case of concrete under high compressive stress) may also play a major role in the determining overall structural response and should not be ignored. A number of cases studies will be presented to illustrate the key aspects of steel and concrete behaviour in fire in the context of maintaining overall structural stability.



## 七、会议赞助单位



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江苏中安科技服务有限公司



厦门熙宝源科技集团有限公司



安元科技股份有限公司是依托南京工业大学的产学研一体化的高新技术企业和软件企业，是国家级专精特新“小巨人”企业、国家级工业互联网平台企业，由深圳创投集团、前海母基金、松禾资本、国中创投、扬子投资、江北科投、远方资本等大型知名创投机构参与战略投资。安元科技与中化能源、国家能源等央企合资成立了相关合资公司，致力于央企和大型国有企业、园区数字化转型服务。

安元科技荟集了600多名由教授、博士、硕士组成的云计算、物联网、大数据、安全工程、应急管理等领域的高级人才团队，致力于国内领先的工业互联网、工业物联网、工业大数据等产品技术研发及产业化建设。研发出的核心产品技术获得国家科技进步奖与多项省部级奖励，被国家应急管理部、工信部、科技部等部委重点推荐，已在全国十几个省/直辖市地区得到了广泛应用。

安元科技作为多个国家级科技支撑平台承担单位，始终秉承“让城市与工业更安全、更智慧”的企业使命，提供智慧城市、智慧园区、智慧企业的整体解决方案。通过不断的战略创新、组织创新、技术创新、模式创新、服务创新，把安元打造成百亿级工业互联网全要素型集团公司。





## 中安广源公司简介

中安广源检测评价技术服务股份有限公司（简称：中安广源），成立于 2002 年，注册资本 5000 万元。自成立以来，中安广源始终秉持争做全国一流技术咨询服务机构的发展目标，专注于为政府、园区和企业提供安全生产、职业健康、节能环保以及应急管理等领域的评价咨询、检验检测技术服务。2020 年，中安广源与广州广电计量检测股份有限公司（简称：广电计量，股票代码：002967）完成第二阶段资产重组，正式成为一家国有控股的第三方检测评价技术服务机构。



中安广源在全国各地下设有江苏、陕西、湖北、山东、广东等 20 余家分子公司，下属企业包括：中环广源环境工程技术有限公司、中安环能（天津）检验检测有限公司、中安广源检测技术服务（河北雄安）有限公司等 5 家子公司。

公司现拥有员工 630 余人，总部区域办公区域 3000 余平方，实验室近 1000 平方，实验设备近 300 台，检测能力超 240 项。全公司本科以上学历及从业资格证持证人数均超过 90%。现有 340 多人的技术团队，具有国务院政府特殊津贴专家 1 人，中国化学品协会专家 20 多人，省市级专家 40 多位；拥有高级工程师 71 名，安全评价师 128 名，注册安全工程师 98 名，职业卫生评价师 59 名，环境影响评价师 18 名。

### 发展历程



### 企业愿景

致力于构建一个更安全、更健康的社会；  
 致力于打造一个更绿色、更环保的环境；  
 你我和衷共济，低碳共赢未来。



# 江苏中安科技服务有限公司

江苏中安科技服务有限公司成立于2007年，是江苏省内最早一批开展安全评价及安全生产技术咨询服务的专业机构。公司南京总部位于国家级企业孵化器——栖霞高新技术产业开发区，是专业从事安全评价、职业病危害评价、安全生产技术咨询、消防安全评估、应急技术咨询、检测检验、安全生产培训等技术服务的高新技术企业。

依靠技能精湛、高素质的人员队伍，规范、科学、严谨的工作态度和专业化、个性化的服务精神，公司于2017年度取得“民营科技企业资质”认定；2018年荣获国家“高新技术企业”认定；2019年公司成功挂牌江苏股权交易中心科技创新板；2020年，公司成功入选“2020年南京市瞪羚企业”。截止2021年，公司拥有发明2项、软件著作权7项、实用新型专利20项。同时，公司还成为省内多个市（区）政府、部门安全技术服务提供商，为数千家企业提供了专业的安全健康服务。

## 做一流的专业安全健康技术服务提供者



### ● 安全评价

安全生产条件和设施综合分析；安全预评价；设立安全评价；安全验收评价；安全设施竣工验收评价；安全现状评价；重大危险源评估；粉尘场所专项评估；初步设计安全专篇（编制咨询）；安全设施设计专篇（编制咨询）；试生产方案编制；危险化学品登记申报；危险化学品生产（使用、经营）许可证证条件专项评价；剧毒品、易制爆、易制毒等管控化学品专项评估；抗爆评估等其他安全专项评估。

### ● 技术服务

企业安全生产标准化一级（二级、三级）咨询辅导；工艺安全管理（HAZOP分析、SIL定级、SIL验证等）；安全生产技术服务平台相关软件研发及业务拓展；企业双重预防机制创建咨询及评审；企业安全生产标准化评审；第三方外包专家检查服务；中小企业安全托管服务；企业外聘专家及注册安全工程师服务；企业安全生产隐患排查及专家会诊；过程安全管理（PSM）体系建设；本质安全诊断；安全设施设计诊断等。

### ● 职业病危害评价

职业病危害预评价；职业病危害现状评价；职业病危害控制效果评价；职业病危害防护设施设计专篇等。

### ● 检测检验服务

可燃有毒气体报警仪检测；工作场所职业病危害因素检测；静设备、动设备在线检测；在用压力容器及储罐区检测；危险化学品包装物及容器（罐体）检测；重大危险源安全监控预警系统检测；管道检测；常压罐车检测、加油站储罐及罐区检测；防爆电气设备检测；可燃有毒气体报警仪检测等。

### ● 应急技术服务

消防安全检查、消防技术咨询；编订企业类、政府类应急预案；策划、协助开展应急预案演练；应急预案、消防等方面的培训。

### ● 消防安全评估

工业企业消防安全评估；各类民用建筑、场所消防安全评估；关于消防安全评估方面的技术咨询。

### ● 安全生产培训

新员工入职培训；专业知识技能提高培训；外部专家培训；上岗证培训；企业安全生产培训；其他培训等。



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## 集团企业文化

我们的愿景：最受尊敬的安全环保技术服务企业！

我们的使命：让全世界没有安全环保事故！

我们的价值观：责任关怀，久来久旺！



## 集团简介



微信公众号



公司网站

熙宝源集团成立于2005年，主要致力于工业过程安全管理、智能化和信息化系统服务、工艺安全分析（HAZOP-LOPA-SIL-QRA）、PSM体系建立与咨询、安全标准化指导、安全培训、工业检测与监控、精细化工反应风险评估、绿色低碳循环水系统、工业仪器仪表、设计和工程实施等业务，被誉为先进的“企业医院”，为企业提供一站式的应急产业服务。旗下公司：厦门熙宝源化工技术有限公司、云南宇诺科技有限公司、样样好安全科技（云南）有限公司、厦门熙宝源注册安全工程师事务所、德宏宇创信息技术有限公司、厦门熙宝源人工智能有限公司和厦门熙宝源信息科技有限公司等公司，并在江苏、山东、新疆、黑龙江、浙江、湖南、云南等省市成立了20多家分子公司和办事处。

公司先后荣获“国家高新技术企业”“厦门市专精特新企业”“厦门市最具成长型优秀民营科技企业”等称号。现为福建省云南商会会长单位，中国化学品安全协会常务理事单位，化工安全教育在线公共服务平台过程安全组组长单位，中国腐蚀与防护学会石油化工腐蚀与安全专业委员会副主任单位，中国职业安全健康协会防火防爆专业委员会委员单位，《云南警方》周刊协办单位，厦门市应急管理协会副会长单位，漳州海事局危防管理专家顾问单位，中石化集团认可开展SIL评估/定量风险评估（QRA）的单位，政府推荐的企业安全风险辨识服务机构，PICC、阳光保险第三方风控服务机构。

与客户同行，客户的利益就是我们的利益，努力为客户提供最完善、最真诚、最满意的服务。携手合作，打造互利共赢的美好明天！



我们的服务方向



我们的业务范围

### “检验分析科”

化学品安全环保机理研究评估；厦门大学-熙宝源化工安全联合实验室，主要开展反应风险评估。

### “门诊科”

依托熙宝源强大的化工安全环保专家团队，开展企业安全环保风险诊断，主要技术有：HAZOP-LOPA-SIL-QRA，安全仪表系统评估验证，双重预防体系，安全生产标准化等。

### “放射科”检测

利用超声波等一系列检测设备实施，评估企业安全环保隐患，量化风险后果严重程度及事故，为“精准整治”提供检测报告。

### “药房及物资供应科”

硬件有供应压力表、流量计、温度表、液位计等传感器，逻辑运算器，终端执行机构等；有毒及可燃气体报警仪；声纹传感器；防爆装置与设备；化工机械完整性再制造技术、智慧安防；亚音频循环水处理设备；石墨烯电容水处理设备等。

软件有HAZOP-LOPA-SIL-QRA分析软件、双重预防体系平台、特殊作业管理系统、应急管理系统、环保管理系统、仿真与实训系统。

### “手术室”安全环保工程项目部

拥有甲级设计工程总承包资质，对于安全环保工程实施设计、采购、施工、维保等全生命周期工程服务，为园区及工业企业的“保健医生或健康顾问”。

### “治未病科”，即：“企业人工智能事业部”

打造企业一体化信息化系统，实现企业“眼睛+大脑”数据采集及逻辑运算职能，从源头遏制事故的发生，做到“上医治未病”。

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