

电致变色研究的复兴与快速增长

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电致变色是一个典型的多学科交叉研究领域: 涉及有机与无机材料、物理与化学、电子与光学器件、测试控制及封装技术、太阳能辐射光谱调控与节能、显色与热控等诸多基础和应用研究。近年来, 电致变色研究呈现百花齐放、精彩纷呈的复兴态势, 特别是在中国的科研技术人员快速进入这一研究领域之后, 使得多年稍显沉寂的国际电致变色研究领域浮现出勃勃生机。这一形势大致从国际国内电致变色专业学术会议参会人员的规模数量上可见一斑。两年一度的国际电致变色会议(International Meeting on Electrochromism-IME)已经举办到第13届, 最近连续几届参会人数基本维持在150人左右。而国内两年一度的全国电致变色会议(Chinese Meeting on Electrochromism-CME), 参会人数由第1届的26人、第2届的150人、第3届的178人、快速增加到2019年第4届的352人。中国的学术界和产业界都对电致变色科学产生了浓厚的兴趣, 每次国内电致变色学术会议的参会人员大致维持在学术科研人员1/3、研究生1/3、企业界人员1/3的比例。

2020年3月, 受《无机材料学报》编辑部委托, 由我和王金敏教授一起为《无机材料学报》组织“电致变色材料与器件”专栏。当时正值新冠疫情肆虐武汉及全国乃至欧洲, 我们的科学家和研究生们在同心同德抗击疫情的同时, 都在更加努力地工作以报效祖国。业界同仁非常支持和配合我们的工作, 积极踊跃投稿, 我们的约稿、收稿、审稿等一系列工作也因此进展顺利。由于收到的稿件数量颇多且质量上乘, 原计划出版一期的电致变色专栏, 在征得编辑部同意的情况下分成两期出版。

我们邀请了国内的优秀研究团队为专栏贡献了稿件, 他们都是无机电致变色研究领域的翘楚。希望这些专业性学术作品能为进一步促进我国电致变色研究和产业化技术的蓬勃发展添砖加瓦。在此专栏付梓之际, 我谨代表电致变色领域的同仁为所有文章的作者和做出突出贡献的编辑们表示由衷的感谢和敬意。

Rejuvenation and Rapid Growth on Electrochromism Researches

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Electrochromism is a typical multidisciplinary crossing research field, involving organic and inorganic materials, physics and chemistry, electronics and optics, testing and controlling and packaging technologies, solar energy and radiation spectral modulation and energy conservation, color and thermal controlling, and many other basic and applied researches. In recent years, electrochromism researches exhibit a colorful and exciting revival trend, especially after many Chinese scientists and companies came into this field. It brings vitality into the international electrochromism research community, which has been a little tranquil for many years. This conclusion can be detected from comparison of the participants number in international and domestic professional academic electrochromic conferences. The bi-annually International Meeting on Electrochromism-IME has been held the 13th session until now, with the number of participants remaining around 150 in recent several times. But for the two-yearly Chinese Meeting on Electrochromism-CME, the number of participants has been quickly increasing from 26 at the 1st, 150 at the 2nd, 178 at the 3rd, to 352 at the 4th CME held in August 2019. Both Chinese academics and industries are deeply interested in electrochromism. The participants of each CME are composed of a

third from academic researchers, a third from graduate students, and a third from industries.

In March 2020, commissioned by editorial board of *Journal of Inorganic Materials*, Prof. WANG Jinmin and I organized the special issue (Electrochromic Materials and Devices) for the Journal. It was the exact and tough period when COVID-19 epidemic ravaged in Wuhan, the whole China and then Europe. Our scientists and graduate students were working even harder in order to fight against the epidemic with great solidarity and to simultaneously contribute and devote to our beloved motherland. Our electrochromism colleagues strongly support and cooperate, actively contributing manuscripts. As a result, series of the work such as manuscripts invitation, submission and reviews *etc.*, had been progressing very smoothly. We had early planned to publish just one issue, but received much more manuscripts with quite high quality, and finally decided to publish two special issues with permission of the journal's editorial.

We have invited the most prestigious research groups in China to contribute to our special issue, and all of them are leaders in the field of inorganic electrochromism researches. It is expected that these professional academic works can further promote the vigorous development of electrochromic research and industrialization technologies in China. On behalf of my colleagues in the field of electrochromism, I would like to express my sincere thanks and respect to the authors and editors who have made outstanding contributions to the special issue's publication.



刁训刚，北京航空航天大学能源与动力工程学院教授，博导；能源工程系/能源与环境国际中心主任；电致变色中心创始人。先后在兰州大学、核工业部理化工程研究院、清华大学、巴西物理研究中心、圣保罗大学、日本理化化学研究所、静冈理工大学、瑞典皇家工学院、法国图卢兹大学学习、工作和学术访问，长期从事一线科研和教学工作。有近 20 年专业从事红外及多频谱隐身技术基础和工程技术研究的经历，先后负责与隐身技术相关的国防基础研究、总装预先研究、国防 973 重大项目专题等 10 余项。近十几年来，带领北京航空航天大学电致变色中心科研团队在光谱选择性涂层特别是无机全固态电致变色薄膜材料和器件及其智能全频谱选择性调控研究领域作了大量基础研究并进行了产业化尝试，在国内、国际电致变色研究领域处于领先地位。发表学术论文 150 余篇，承担纵向、横向、保密课题 30 余项，获得授权发明专利 11 项，省部级科技进步成果 4 项。担任中国感光学会电致变色专业委员会副主任、中国材料学会太阳能材料分会秘书长，中国高科技产业化研究会新能源专业委员会常务副主任，《宇航材料与工艺》和《真空与低温》杂志编委，中国真空学会薄膜专业委员会委员。研究课题组在电致变色研究领域与法国图卢兹大学、波尔多大学、希腊雅典国立技术大学、瑞典皇家工学院、乌普萨拉大学、澳大利亚 CSIRO 能源中心、比利时布鲁塞尔自由大学、韩国汉阳大学保持密切的合作关系。E-mail: diaoxg@buaa.edu.cn