



2019年中国家用电器技术大会

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论文集

中国家用电器协会 《电器》杂志社 编

把握时代

(前言)

当今，我们正处在大变革时期，国际政治、经济正在并继续着前所未有的变化，它直接影响到我们的出口，但同时也促使我们加快国际化进程；人工智能等新技术的快速发展，给家电产品和技术带来了更大的变化空间，它或许正在改变我们的竞争格局；而市场的根本变化在于主要家电产品的需求从之前的增量市场已经纷纷转为存量市场，把握更新需求更加考验企业的消费者洞察能力和产品创新能力。

对于中国家电人的挑战还在于，前边可以对标的榜样越来越少。我们在上游关键技术和关键部件领域需要更多地依靠自己来培育和发展。越来越多的技术已经找不到卖家——或者别人不做了或者别人不愿意再卖了……相对应的是，我们的创新研发不仅要以用户痛点为起点，更要依托扎实的基础理论、技术基础，更要掌握最先进的方法和工具，更需要最优秀的人才。我们看到，确实有企业正是这样，在大变革时代有了更快的发展。这也让身处大变革时代的整个家电行业，有条件去抓住变革的机遇。

2018年11月中国家用电器协会举办了“三十而立，逐梦远行”为主题的大型庆典活动，庆祝中国家电行业发展40周年，中国家用电器协会成立30周年。中国家用电器协会理事长姜风在会上回顾分析了中国家电行业的成功之路，首先得益于改革开放的历史机遇；二是得益于引进技术高起点的发展方式；三是得益于充分的市场竞争；四是得益于融入全球的开放发展模式；五是得益于与时俱进的创新精神；六是得益于拥有一批富有创新精神的优秀企业家以及一大批刻苦钻研的优秀家电科技工作者和产业工人队伍。会上，中国家用电器协会授予部分优秀家电科技工作者的代表“行业精英奖”。

毫无疑问，在中国家电40年发展中，优秀的家电行业科技工作者通过自己的才智在技术进步、创新发展上努力，对于产业提升竞争力、做大做强、转型升级发挥着越来越重要的作用。从2000年至今召开的16届中国家用电器技术大会的发展变化中，我们能深深地感受到这一点！论文的数量从2000年的48篇、2010年130篇、2013年起

过200篇、2018年超过300篇，今年——2019年收到论文391篇，论文数量在去年基础上又有近23%的大幅度增加。这不仅是数量的增加，背后则是企业在研发上的持续投入、研发体系的不断完善、更多优秀人才加入家电技术研发队伍、研发工作不断深化和扩展、行业企业特别是龙头企业技术能力的增强！

随着论文数量的大幅增加，今年我们邀请了更多的专家参加到论文评审工作中。评审专家包括吴建华、陈江平、何国庚、李红旗、张华、王瑞祥、黎晓云、吴俐俊、石文星、丁国良、郑贵林、晏刚、邹慧明、黄敏、万春晖等。专家们认为，总体来看，今年申报的论文种类涵盖面广，研究工作更加细化，实用价值较高，大多涉及实际产品的开发或开发过程应用的新技术，体现出各家企业的特色和研发方向，大致反映出行业的技术发展趋势。

从论文的分布来看，收到的空调、冰箱、厨房电器产品类论文的占比均在20%左右。从投稿企业的分布来看，论文来自80多家家电企业、大学、研究或设计机构。其中，论文投稿量超过40篇的企业除美的、海尔2家外，又增加了海信、博西家电，变成4家中外大公司，老板、中国家用电器研究院的投稿量超过20篇，三星、TCL、奥克斯、长虹超过10篇，投稿超过5篇的企业有美芝、方太、惠而浦、格兰仕。企业论文数量的增加，让我们感受到在严峻的市场环境下企业以技术提升产品竞争力的努力，以及取得的丰富的技术进步成果。

论文的原创性是《中国家用电器技术大会论文集》最值得我们自豪的特色。经查重，论文与公开发表的论文库中论文重合率（以下简称查重率）低于10%的305篇，其中查重率为0%的106篇。本论文集收录论文的查重率全部低于15%。近350篇交由专家审核，经过专家评审，共有241篇论文入选。拥有以下部分或全部特征的论文得到专家们的认可并入选论文集：研究针对行业共性问题，具有一定的新意和创新性；针对问题提出了相应的解决方法；论文写作规范、叙述清晰、结构合理；实验可信、数据可

靠、分析有据、结论合理，验证了方法的可行性与应用前景；研究内容和结果具有较好的实用性和参考价值，对行业技术研究与产品开发具有指导意义。从论文写作角度来看，专家们指出：论文写作水平参差不齐，总体还需要加强。部分论文仍然存在一些需要改进和完善的问题，比如研究水平不足，题目、摘要与英文摘要表述不准确，写作规范性与逻辑性有待加强，试验过程和处理结果有待改进，支撑数据和分析结果需要进一步完善，图表与文献引用不规范等。应该说，我们的很多论文内容是很有参考意义的，如果作者能够按照专家的意见在今后的论文写作中注意改进和完善，论文水平一定会有较大的提高。

经过专家评审，本论文集对于创新性不够、学术价值和应用参考价值不高；或分析过于浅显、逻辑不清晰、结论不明确；或不符合论文写作要求的论文没有收录，淘汰66篇。

需要说明的是，部分论文的内容和写作已具有相当的水平，但在试验数据或实质内容方面仍需要一定的时间给以补充和完善，还有少数论文查重率略高于15%，在往年这样的论文都是有机会修改的。但是，今年由于我们在中国知网的论文查重账号意外出现了问题，致使我们的查重起始时间一而再、再而三地被延迟了半个多月，消耗掉了原本留给大家修改论文的宝贵时间。为了不影响本届会议论文集的编辑和出版，今年暂时没有录用这部分论文。这是非常令人遗憾的，我们相信这部分论文也是很有交流价值的！为此，我们逐一通知作者本人建议修改后明年再递交。今年暂未录取84篇。

美的集团中央研究院钟贵烈《基于家用空调塑封直流电机轴电压的仿真研究》、海信（山东）空调有限公司杨岳《基于正交试验的多翼离心风机蜗壳型线优化》、博西华电器（江苏）有限公司杨晨《电容式感应除霜在家用冰箱中的技术研究》、美的集团中央研究院吴信宇《热泵干衣机系统热力特性的动态仿真与优化》、美的集团冰箱事业部方忠诚《冰箱换热器换热性能测试方法研究与应用》、海信（山东）冰箱有限公司赵强《基于参数自识别的冰箱压缩机控制技术的研究与应用》、杭州老板电器股份有限公司李智宝《基于NURBS曲面的内凹式蜗舌对吸油烟机气动性能的影响研究》、长虹美菱股份有限公司陈开松《冰

箱外置冷凝动态散热智能算法研究》、海信（山东）冰箱有限公司孙敬龙《基于模态匹配的酒柜减振降噪研究》、美的集团中央研究院戴龙珍《湍流模型对于家电轴流小风扇CFD仿真准确性的影响研究》、数字化家电国家重点实验室孟永哲《吸油烟机死区降噪技术设计与实验验证》等论文获得了多位专家的一致推荐而入选优秀论文，成为本论文集中优秀论文的标杆。2019年共评出优秀论文58篇，优秀论文比例保持在15%。优秀论文的特征是：课题研究具有相当的代表性和较好的创新性；针对问题提供了行之有效的解决方法和思路；研究工作细致、认真；论文写作规范通顺、条理清晰，同时论证严谨、分析全面；实验可靠；结论合理。研究内容和结果具有较强的指导意义和参考价值，研究结果实用性较强，对行业相关研发活动具有参考作用。

在此，我代表中国家用电器协会向所有作者表示感谢！感谢每位作者以论文参与行业技术交流！感谢大家年复一年，为产业技术进步、为家电产品创新不懈努力取得的成绩！

在这里还要代表中国家用电器协会和所有的论文作者，感谢吴建华、陈江平、何国庚、李红旗、张华、王瑞祥、黎晓云、吴俐俊、石文星、丁国良、郑贵林、晏刚、邹慧明、黄敏、万春晖等专家，感谢各位专家在有限的时间内，在炎热而繁忙的暑期，不辞辛苦亲自阅读评审论文，为作者的研究工作和论文写作给予热情肯定、鼓励和很多宝贵的意见和建议。

最后，感谢所有编辑工作者，在比往年更短的时间周期完成更大的编辑工作量，你们做出了更大的付出。谢谢你们！

再次感谢所有人的参与！中国家用电器技术大会因为你们而精彩！

中国家用电器协会副理事长



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