

汽车工程系

DEPARTMENT OF AUTOMOTIVE ENGINEERING

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夏 勇

清华大学副研究员

**教育背景**

1998-2004 中国科学技术大学力学和机械工程系, 固体力学, 博士

1994-1998 中国科学技术大学高分子科学与工程系, 高分子物理, 学士

**工作经历**

2010-今, 清华大学汽车工程系, 副研究员

2013-2014, 麻省理工学院机械工程系, 访问学者

2006-2010, 清华大学汽车工程系, 助理研究员

2004-2006, 清华大学汽车工程系, 博士后

**学术兼职**

汽车安全与节能国家重点实验室学术秘书

中国汽车工程学会汽车安全技术分会副秘书长

美国汽车工程师学会 (SAE International) 会员

**研究领域**

动力电池碰撞失效预测与安全防护

材料力学行为测试与表征

点焊和胶粘接头冲击破坏失效

结构耐撞性与轻量化设计

行人碰撞安全技术

**学术成果**

(一) 部分论文

1. Zhu Juner, Xia Yong\*, Zhou Qing, Wierzbicki Tomasz. A rate-dependent model for metals based on a master curve of normalized hardening behavior of DP steels. *Journal of Dynamic Behavior of Materials* 2 (2016) 1-11.
2. Xia Yong, Zhu Juner, Wang Kai, Zhou Qing. Design and verification of a strain gauge based load sensor for medium-speed dynamic tests with a hydraulic test machine. *International Journal of Impact Engineering* 88 (2016) 139-152.
3. Jiang Xuqian, Luo Hailing, Xia Yong\*, Zhou Qing. Mechanical behavior of lithium-ion battery component materials and error sources analysis for test results. *SAE International Journal of Materials and Manufacturing* 9 (2016) 614-621.
4. Meng Yan, Xia Yong\*, Zhou Qing, Lin Shaoting. Identification of true stress-strain curve of thermoplastic polymers under biaxial tension. *SAE International Journal of Materials and Manufacturing* 9 (2016) 768-775.
5. Xia Yong, Zhu Juner, Zhou Qing. Verification of a multiple-machine program for material testing from quasi-static to high strain-rate. *International Journal of Impact Engineering* 86 (2015) 284-294.
6. Yao Li, Xia Yong\*, Zhou Qing. A Study on hygrothermal degradation and recovery of an epoxy adhesive using

- molecular dynamics simulation. *Journal of Adhesion Science and Technology* 29 (2015) 753-766.
7. Zhang Fan, Yang Xin, Xia Yong, Zhou Qing, Wang Hui-Ping, Yu Tong-Xi. Experimental study of strain rate effects on the strength of adhesively bonded joints after hygrothermal exposure. *International Journal of Adhesion & Adhesives* 56 (2015) 3-12.
  8. Zhu Juner, Xia Yong\*, Luo Hailing, Gu Gongyao, Zhou Qing. Influence of flow rule and calibration approach on plasticity characterization of DP780 steel sheets using Hill48 model. *International Journal of Mechanical Sciences* 89 (2014) 148-157.
  9. Xia Yong, Wierzbicki Tomasz, Sahraei Elham, Zhang Xiaowei. Damage of cells and battery packs due to ground impact. *Journal of Power Sources* 267 (2014) 78-97.
  10. Yang Xin, Yao Li, Xia Yong, Zhou Qing. Effect of base steels on mechanical behavior of adhesive joints with dissimilar steel substrates. *International Journal of Adhesion & Adhesives* 51 (2014) 42-53.
  11. Zhou Qing, Wu Xueyuan, Xia Yong, Cai Wayne. Spot weld layout optimization of tube crash performance with manufacturing constraints. *Journal of Manufacturing Science and Engineering* 136 (2014) MANU-12-1343.
  12. Nie Bingbing, Xia Yong, Zhou Qing, Huang Jun, Deng Bing, Neal Mark. A response-surface-based tool for vehicle front-end design for pedestrian impact protection using human body model. *International Journal of Vehicle Design* 66 (2014) 347-362.
  13. Nie Bingbing, Zhou Qing, Xia Yong, Tang Jisi. Influence of feature lines of vehicle hood styling on headform kinematics and injury evaluation in car-to-pedestrian impact simulations. *SAE International Journal of Transportation Safety* 2 (2014) 182-189.
  14. Gu Gongyao, Xia Yong, Lin Chin-hsu, Lin Shaoting, Meng Yan, Zhou Qing. Experimental study on characterizing damage behavior of thermoplastics. *Materials and Design* 44 (2013) 199-207.
  15. Zhang Fan, Yang Xin, Wang HP, Zhang Xiaowei, Xia Yong, Zhou Qing. Durability of adhesively-bonded single lap-shear joints in accelerated hygrothermal exposure for automotive applications. *International Journal of Adhesion & Adhesives* 44 (2013) 130-137.
  16. Nie Bingbing, Xia Yong, Zhou Qing, Huang Jun, Deng Bing, Neal Mark. Response surface generation for kinematics and injury prediction in pedestrian impact simulations. *SAE International Journal of Transportation Safety* 1 (2013) 286-296.
  17. Huang Jun, Xia Yong, Nie Bingbing, Zhou Qing. A bumper model with dynamic contact stiffness for pedestrian legform impact simulation. *Proceedings of the Institution of Mechanical Engineers, Part D, Journal of Automobile Engineering* 227 (2013) 905-913.
  18. Yang Xin, Xia Yong, Zhou Qing, Wang Pei-Chung, Wang Kathy. Modeling of high strength steel joints bonded with toughened adhesive for vehicle crash simulations. *International Journal of Adhesion & Adhesives* 39 (2012) 21-32.
  19. Li Xu, Xia Yong, Li Ziran, Xia Yuanming. Three-dimensional numerical simulations on the hyperelastic behavior of carbon-black particle filled rubbers under moderate finite deformation. *Computational Materials Science* 55 (2012) 157-165.
  20. Lai Xinghua, Xia Yong, Wu Xueyuan, Zhou Qing. An experimental method for characterizing friction properties of sheet metal under high contact pressure. *Wear* 289 (2012) 82-94.
  21. Gu Gongyao, Xia Yong, Zhou Qing. On the fracture possibility of thin-walled tubes under axial crushing. *Thin-Walled Structures* 55 (2012) 85-95.
  22. Gu Gongyao, Lin Shaoting, Xia Yong, Zhou Qing. Experimental study on influence of section thickness on mechanical behavior of die-cast AM60 magnesium alloy. *Materials & Design* 38 (2012) 124-132.
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  26. Yang Xin, Xia Yong, Zhou Qing. A simplified FE model for pull-out failure of spot welds. *Engineering Fracture Mechanics* 77 (2010) 1224-1239.
  27. Xia Yong, Zhou Qing, Wang PC, Johnson NL, Gayden XQ, Fickes JD. Development of high efficiency modeling technique for weld-bonded steel joints in vehicle structures, Part I: static experiments and simulations. *International Journal of Adhesion and Adhesives* 29 (2009) 414-426.
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  29. Xia Yong, Yang Xin, Zhou Qing. Effect of stress softening in bumper foams on the low speed impact performance of vehicles. *SAE International Journal of Materials and Manufacturing* 1 (2009) 548-553.
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  31. Xia Yong, Li Wei, Xia Yuanming. Test and characterization for the incompressible hyperelastic properties of conditioned rubbers under moderate finite deformation. *Acta Mechanica Sinica* 17 (2004) 307-314.
  32. Xia Yong, Li Wei, Xia Yuanming. Study on the compressible hyperelastic constitutive model of tire rubber compounds under moderate finite deformation. *Rubber Chemistry and Technology* 77 (2004) 230-241.

## (二) 专利

1. 一种高速动态试验力测量环节的设计方法. 中国发明专利, ZL 2013 1 0606117.X, 授权公告日: 2015年04月15日.
2. 一种拉伸卸载试验装置. 中国发明专利, ZL 2013 1 0552574.5, 授权公告日: 2015年10月21日.
3. 具有可逆预警功能的汽车座椅安全带系统. 中国发明专利, ZL 2011 1 0035350.8, 授权公告日: 2012年12月19日.
4. 具有两种吸能模式的汽车保险杠. 中国发明专利, ZL 2010 1 0173437.7, 授权公告日: 2012年2月8日.
5. Vehicle hood with sandwich inner structure. US Patent No. 7,735,908 B2, Awarded June 15, 2010.
6. Energy absorbing vehicle hood assembly with asymmetric sandwich inner structure. US Patent No. 7,690,720 B2, Awarded April 6, 2010.
7. Vehicle hood assembly with rippled cushion support. US Patent No. 7,635,157 B2, Awarded December 22, 2009.

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