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Engineering & Scientific Consulting

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經理，工程顧問 | 機械工程

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專業履歷

張起明博士在電子封裝以及PCB組裝領域擁有超過十年的產業經驗。他的經驗涵蓋消費和工業電子產品的設計、製造、測試、可靠性工程、力學和熱學分析、故障診斷以及根本失效機理分析等。他精通無鉛釐焊點可靠性、波峰焊接和表面貼裝技術 (SMT)、Sn-Ag-Cu 共晶錒錫合金和金屬間化合物 (IMC)、電化學遷移和枝晶/晶鬚/導電陽極絲 (CAF) 生長、2.5D/3D 高密度垂直堆疊封裝架構、球柵陣列 (BGA) 和平面網格陣列 (LGA) 封裝、直接垂直層疊封裝 (PoP)、系統級封裝 (SiP)、晶片直接封裝 (CoB)、扇出型和扇入型封裝 (Fan-out and Fan-in)、晶圓級封裝 (WLP)、再布線層技術 (RDL)、印刷電路板組裝 (PCBA)、電子元件和電路板的的保形塗層、背板級組裝、焊膏和助焊劑、電子元器件、LED、柔性基板、金線焊接和其它互聯技術、IPC/JEDEC/JEITA 標準、USB-IF 規範、大功率電器和電源適配器、熱界面材料和熱管理、膠水塗敷和粘接工藝、以及消費型和工業電子產品的質量管控、安全性評估和事故調查。

張起明博士參與過許多電子封裝以及PCB組裝相關的工業項目，包括制程優化、批量生產的品質控制、成本控制、熱機耦合測試/仿真以及材料特性檢測。他擁有從新產品原型到產能擴張和批量生產各個階段的多年產線經驗。他也為電子產品製造和電子封裝領域的企業提供工廠審核和專業培訓課程。

張起明博士還精通力學和熱學有限元分析 (FEA)、實驗室測試技術，包括機械和熱測試、材料特性檢測、表面分析技術、惡劣環境可靠性測試、電氣測試、電鍍和物理/化學塗層可靠性、壽命預測和品質管控體系。

學歷 & 榮譽

2017 年，香港科技大學，機械工程，哲學博士學位

2012 年，香港科技大學，機械工程，理學碩士學位

2011 年，瀋陽農業大學，機械設計制造及其自動化，工學學士學位

2016 年，電子封裝技術國研討會 (ICEPT)，傑出論文獎 (第壹名)，「Correlation of Board and Joint Level Test Methods with Strain Dominant Failure Criteria for Improving the Resistance to Pad Cratering」

執照和證照

SOLIDWORKS 原廠專業認證 (CSWA)

工作經驗

2017-2018 年, 香港雅特生嵌入式科技有限公司, 高級工程師 I

2013-2017 年, 香港科技大學先進微系統封裝中心, 博士後研究員/研究與教學助理

2012 年, 瀋陽機床集團中央研究院, 結構工程師

組織會員資格

電子電器工程師協會(IEEE)會員

電子封裝協會(EPS)會員

語言能力

普通話

英語

專利

「焊點可靠性測試方法及其插針裝置」, 中國專利 CN 103293099 A

研究期刊發表

Q. Zhang, et al. "Correlation of Warpage Distribution with the Material Property Scattering for Warpage Range Prediction of PBGA Components." *Journal of Electronic Packaging* (Dec. 2018), 140(4).

Q. Zhang, et al. "Determination of a Meaningful Warpage Acceptance Criterion for Large PBGA Components through the Correlation with Scattering in Material Properties." In 2018 IEEE 68th Electronic Components and Technology Conference (ECTC), pp. 718-723.

Q. Zhang, Jeffery C.C. Lo, and S.W. Ricky Lee, "Pad cratering based failure criterion for the life prediction of board level cyclic bending test." in 2017 IEEE 67rd Electronic Components and Technology Conference (ECTC), 2017, pp. 448-455.

Q. Zhang, Jeffery C.C. Lo, and S.W. Ricky Lee, "Modeling of residual strain in BGA-PCB assemblies for pad cratering control." *Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm)*, 2017 16th Intersociety Conference on. IEEE, 2017, pp. 1153-1160.

Q. Zhang, Jeffery C.C. Lo, and S.W. Ricky Lee, "Correlation of board and joint level test methods with strain dominant failure criteria for improving the resistance to pad cratering." *Electronic Packaging Technology (ICEPT)*, 2016 17th International Conference on. IEEE, 2016, pp. 1-6.

Q. Zhang et al, "Characterization of orthotropic CTE of BT substrate for PBGA warpage evaluation." *Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm)*, 2016 15th Intersociety Conference on. IEEE, 2016, pp. 1312-1319.

Q. Zhang et al, "Assessment of solder pad cratering strength using cold pin pull test method with pre-fabricated pin arrays," in 2013 IEEE 63rd Electronic Components and Technology Conference (ECTC), 2013, pp. 1788-1793.

Q. Zhang et al, "Development of innovative cold pin pull test method for solder pad crater evaluation," in Electronic Materials and Packaging (EMAP), 2012 14th International Conference on, 2012, pp. 1-4.

F. Le, S.W. Ricky Lee, and Q. Zhang, "3D chip stacking with through silicon-vias (TSVs) for vertical interconnect and underfill dispensing." Journal of Micromechanics and Microengineering 27.4 (2017): 045012.

Q. Zhang (2017). Strain Dominant Failure Criteria for Board Level Pad Cratering under Over-stress and Fatigue Loading (Doctoral dissertation, Hong Kong University of Science and Technology).

研討會發表

Invited Talk of Exponent Hong Kong 2019 One-Day Technical Seminar Series: Solving Multidisciplinary Consumer Product Development Challenges, "Reliability Engineering of Consumer and Industrial Electronics: From the Design, Manufacturing to Testing".

Invited Talk of 2019 20th International Conference on Electronic Packaging Technology, "Investigations on Electrolytic Capacitor to Improve the Reliability under Assembly Level Impact Condition".

Invited Talk of Shenzhen Institutes of Advanced Technology (SIAT) at 2019 Mainland, Taiwan, Hong Kong and Macau Key Technology Forum of Electronic Packaging, "Failure Analysis of Consumer Electronics".

Invited Talk of Huawei 2017 Technology Forum at Shanghai, "Strain Dominant Failure Criteria for Board Level Pad Cratering under Over-stress and Fatigue Loading".

Invited Talk of The Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITHERM) 2017, "Modeling of Residual Strain in BGA-PCB Assemblies for Pad Cratering Control".

同行評審

美國機械工程師學會 (ASME) Journal of Electronic Packaging 期刊審稿人