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**MAJOR RESEARCH INTERESTS / CURRENT RESEARCH**

Tissue Engineering; Biomaterials; Polymer Synthesis and Modifications; Scaffold Fabrications Technology; Bioreactor Design

**RECENT REPRESENTATIVE PUBLICATIONS**

- 1) Y.C. Chia, S.H. Lim, K.S.Chian, S.Yi, W.T. Chen, "An Optimisation Study of Underfill Dispensing Volume", *Journal of Electronics Packaging Manufacturing*, 26, 3, 2003
- 2) F. Zhang, M. Li , W.T. Chen and K.S. Chian. "An Investigation into the Effects of Flux Residues on Properties of Underfill Materials for Flip Chip Packages", *IEEE transaction*, 26, 1, CPMT (2003)
- 3) F. Su, S. Yi, K.S. Chian, "A Simple method to unwrap the geometrically discontinuous phase map and its application in the measurement of IC package", *J. Optics and Laser in Engineering*, 41, 463-473, 2004
- 4) J. Duan, K.T.Wan, K.S.Chian, "Mechanical integrity and adhesion of thin films for applications in electronics packaging and cell biology", *Thin films*, 424, 120-124, (2003)
- 5) W.D. van Driel, G.Q. Zhang, J.H.J. Janssen, L.J. Ernst, F. Su, K.S. Chian, S. Yi, "Prediction and Verification of Process Induced Warp of Electronic Packages", *Microelectronics Reliability*, 43, 765-774, 2003
- 6) L.Hao, J.Lawrence, K.S. Chian,"On the effects of CO2 laser irradiation on the surface properties of a Magnesia partially stabilized zirconia (MgO-PSZ) bioceramics and the subsequent improvements in human osteoblast cell adhesion", Accepted for publications in *J. Biomaterials Applications* (Accepted, 30 Jan 2004)
- 7) L.Hao, J. Lawrence, D.K.Y. Low, K.S.Chian, G.C. Lim, H.Y. Zheng," The formation of a hydroxyl bond and the effects thereof on bone-like apatite formation on a magnesia partially stabilized zirconia (MgO-psz) bioceramics following CO2 laser irradiation", Accepted for publication in *Journal of Materials Science: Materials in Medicine* (Accepted, 18 March, 2004)
- 8) B.D. Ratner, K.S. Chian, C.M. Giachelli, B.Beckstead, A.C. Ritchie, "Esophagus: A Tissue Engineering Challenge", Accepted for publication in the 4th Edition of CRC's *Biomedical Engineering Handbook*.

**POSSIBLE / CURRENT RI PARTNERS AND PROJECTS**

A/P Walter Hunziker (IMCB), Tissue Engineering of the Esophagus



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### **MAJOR RESEARCH INTERESTS**

- Nanostructured bioceramics and bioactive coatings: Development of novel nano-structures and biological evaluations
- Thermal sprayed advanced ceramics/ composite/ functionally graded coatings: Powder processing and coatings performance
- Synthesis of hard boride layers through spark plasma sintering (SPS) process
- Rapid consolidation of nanomaterials through pulsed electric current sintering and electric field effects
- Advanced manufacturing processes for fabrication of solid oxide fuel cell (SOFC) components (electrodes/electrolytes/interconnectors and support)
- Characterization and evaluation of thermal sprayed splats through high-resolution transmission electron microscopy (HR-TEM)

### **RECENT REPRESENTATIVE PUBLICATIONS**

1. K.A. Khor, Y.W. Gu and P. Cheang, "Plasma spraying of functionally graded Hydroxyapatite /Ti-6Al-4V coatings" *Surface and Coatings Technology*, Volume 168, Issues 2-3, 22 May 2003, Pages 195-201
2. K.A. Khor, L.G. Yu, S H Chan and X.J. Chen, "Densification of plasma sprayed YSZ electrolytes by spark plasma sintering (SPS)" *J. Eur. Ceram. Soc.*, Vol. 23/11 pp. 1855-1863, Elsevier Science (UK) (2003).
3. R. Kumar, P. Cheang and K.A. Khor, "Radio Frequency (RF) Suspension Plasma Sprayed Ultra-Fine Hydroxyapatite/Zirconia Composite Powders" *Biomaterials*, vol 24/15 pp 2611 - 2621 Elsevier Science (UK) (2003).
4. K.A Khor, H Li, and P. Cheang, "Processing - Microstructure - Property Relations in HVOF Sprayed Calcium Phosphate Based Bioceramic Coatings" *Biomaterials* (UK), Vol. 24/13 pp. 2233-2243 Elsevier Science (2003).
5. K.A. Khor, H. Li, and P. Cheang, "Characterization of the bone-like apatite precipitated on HVOF sprayed calcium phosphate deposits" *Biomaterials*, Volume 24, Issue 5, February 2003, Pages 769-775.
6. K.A. Khor, H. Li, P. Cheang, and S.Y. Boey, "In vitro behavior of HVOF sprayed calcium phosphate splats and coatings" *Biomaterials*, Volume 24, Issue 5, February 2003, Pages 723-735.
7. L.G. Yu, K.A. Khor, G. Sundararajan, "Boriding of mild steel using spark plasma sintering (SPS) technique" *Surface & Coatings Technology*, Volume 157, Issues 2-3, 22 August 2002, Pages 226-230 Elsevier Science (UK) (2002).
8. X.J. Chen, K.A. Khor, S.H. Chan, and L.G. Yu, "Influence of Microstructure on the Ionic Conductivity of YSZ Electrolyte" *Materials Science & Engineering A*, Volume 335, Issues 1-2, 25 September 2002, Pages 246-252 Elsevier Science (USA) (2002).

### **POSSIBLE / CURRENT RI PARTNERS AND PROJECTS**

- SIMTech-BIOPRO
- IMRE, IBN



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### **MAJOR RESEARCH INTERESTS**

Modelling of manufacturing processes and materials behaviours, particle migration in fluid flow, debinding, rheological behaviours of particle filled systems and polymers, gellation mechanisms, laser machining.

### **RECENT REPRESENTATIVE PUBLICATIONS (2002-2003)**

1. Lam Y.C., Yue C.Y., Yang Y.X. , Tam K.C., Hu Xiao, 2003, Interfacial Properties of PC/LCP and PS/HIPS Polymer Pairs under Shear Deformation, *Journal of Applied Polymer Science (Unknown)*. (Accepted for publication.)
2. Lam Y.C., Chen X., Tam K.C., Yu S.C.M., 2003, Simulation of Particles Migration of Powder-Resin system in Injection Molding, *ASME Journal of Manufacturing Science and Engineering (United States)*. (Accepted for publication.)
3. Jianhua Li, Joshi S.C., Lam Y.C., 2002, Curing optimization for pultruded composite sections, *Composites Science and Technology (United Kingdom)*, Vol. 62, No. 3, pp 457 - 467.
4. Li L., Shan H, Yue C.Y., Lam Y.C., Tam K.C., Hu Xiao, 2002, Thermally Induced Association and Dissociation of Methylcellulose in Aqueous Solutions, *Langmuir-The ACS Journal of Surfaces and Colloids (United States)*. (Accepted for publication.)
5. Ying S.J., Lam Y.C., Yu S.C.M., Tam K.C., 2002, Two-dimensional thermomechanical simulation of thermal debinding of powder injection molding compact, *International Journal of Powder Metallurgy (United States)*. (Accepted for publication.)
6. Boey Y.C., Tok Iing Yoong, Lam Y.C., Chew S.Y., 2002, On the Effects of Secondary Phase on Thermal Conductivity of AlN Ceramic Substrates using a Microstructural Modeling Approach, *Materials Science & Engineering A (Switzerland)*. (Accepted for publication.)
7. Chen X., Lam Y.C., Tan K. W., Ma Jan, Tam K.C., Yu S.C.M., 2002, Shear-induced particle migration in a Pressure-driven tube flow, *Key Engineering Materials (Switzerland)*, Vol. 227, pp 183 - 188.
8. Ying S.J., Lam Y.C., Yu S.C.M., Tam K.C., 2002, Thermal debinding modeling of mass transport and deformation in powder-injection molding compact, *Metallurgical and Materials Transactions B (United States)*, Vol. 33B, No. 3, pp 477 - 488.
9. Ying S.J., Lam Y.C., Yu S.C.M., Tam K.C., 2002, Simulation of polymer removal from a powder injectino molding compact by thermal debinding, *Key Engineering Materials (Switzerland)*, Vol. 227, pp 1 - 6.
10. Lam Y.C., Chen X., Tan K. W., Ma Jan, Tam K.C., Yu S.C.M., 2002, Experimental Measurdments and Simulation of Particle Migration in Pressure-Driven Tube Flow: Applications to Flow in Runners, *Journal of Injection Molding Technology (United States)*, Vol. 6, No. 1, pp 45 - 57.

### **POSSIBLE / CURRENT RI PARTNERS AND PROJECTS**

- SIMTech (Dr. Lim Gnian Cher and Dr. Wan Yee Ming, Stephen) - Development of a Novel Electrokinetic Micropump with application for microfluidic mixing
- SIMTech (Dr. Zheng Hong Yu) - Femtosecond laser machining and laser assisted etching



## **MURUKESHAN Vadakke Matham**

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### **MAJOR RESEARCH INTERESTS**

- Optics for medical and forensic applications
- Fiber optic sensors
- Laser Material Processing and
- Applied Optics/ Optical Metrology

### **RECENT REPRESENTATIVE PUBLICATIONS**

1. N. Sujatha, V. M. Murukeshan, L. S. Ong and L. K. Seah (2003) An all fiber optic system modeling for the gastrointestinal endoscopy: design concepts and fluorescent analysis, *Optics Communications*, 219 (1-6), 71-79.
2. V. M. Murukeshan, Lai Yin Fei, V. Krishnakumar, L. S. Ong and A. Asundi (2003) Development of Matlab filtering techniques in digital speckle pattern interferometry, *Optics and Lasers in Engineering*, 39( 4), 441-448.
3. V. M. Murukeshan , Trends in digital speckle pattern interferometry (2003), *Optics and Lasers in Engineering*, 39(4), 409-410.
4. Wang J, Murukeshan VM, Asundi A (2002) A novel curvature fringe extraction method from speckle slope fringes, *Optics Communications* 205 (1-3): 43-48.
5. Liu AQ, Zhang XM, Murukeshan VM, et al. (2002), Micromachined wavelength tunable laser with an extended feedback model, *IEEE J SEL TOP QUANT* 8 (1): 73-79.
6. V.M.Murukeshan, Chan P.Y, Ong. L.S, and A. Asundi, (2001), Intra-core FBG for strain measurement in embedded composite structures, *Appl. Optics*, USA, 40(1), 145-149.
7. V.M.Murukeshan, Chan P.Y, Ong. L.S, and A. Asundi (2000) Effects of different parameters on the performance of a fiber polarimetric sensor for smart structure applications, *Sensors and Actuators A [Physical]*, A80(3),249-55.
8. V.M.Murukeshan, Chan P.Y, Ong. L.S, and Seah L.K (2000) Cure monitoring of smart composites using Fiber Bragg Gratings ( FBG) based embedded sensors, *Sensors and Actuators A [Physical]*,. A79(2), 153-61.
9. V.M.Murukeshan, Chan P.Y, Ong. L.S, and A. Asundi, (1999) On-line health monitoring of smart composite structures using fiber polarimetric sensor, *Smart Materials and Structures*, UK, 80(5), 544-48.
10. V. M. Murukeshan, A.R. Ganesan, and R. S. Sirohi (1999) Real –time curvature measurement using double shear TV Holography, *Optik* , Germany, 110(2), 57-60.

### **POSSIBLE / CURRENT RI PARTNERS AND PROJECTS**

- SIMTech (Dr Zheng Hong Yu) - Femtosecond laser assisted waveguide fabrication for bio-sensing applications
- SIMTech (Dr Zheng Hong Yu) - Laser assisted chemical etching



## **YEO Swee Hock**

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### **MAJOR RESEARCH INTERESTS**

- ultraprecision manufacturing processes
- precision engineering
- innovative applications based on ultrasonic and magnetism

### **RECENT REPRESENTATIVE PUBLICATIONS**

1. S.H. Yeo and L.K. Tan, (1999) "Effects of ultrasonic vibrations in micro-electro discharge machining of micro-holes", *Journal of Micromechanics and Microengineering*, Vol. 9, pp. 345-352.
2. S.H. Yeo and J.H. Choo, (2001) "Effects of electrode rotation in the fabrication of high aspect ratio microstructures by Localised Electrochemical Deposition", *Journal of Micromechanics and Microengineering*, U.K. Vol.11, pp.435-442.
3. S.H. Yeo and E.C. Tan, (2001)"Micromachining of assembled liquid crystal displays", *Journal of Engineering Manufacture*, Vol.215, pp.1625-1632.
4. S.H. Yeo, K. Ramesh and Z.W. Zhong, (2002) "Ultra high speed grinding spindle characteristics upon using oil-air mist lubrication", *International Journal of Machine Tools & Manufacture*, Vol.42, pp.815-823.
5. S.H. Yeo and S.A.P. Balon, (2002)"High speed grinding using thin abrasive disks", *Journal of Micromechanics and Microengineering*, Vol.12, pp.N1-N5.
6. S.H. Yeo, J.H. Choo and K.H.A. Sim, (2002) "On the effects of ultrasonic vibrations on localised electrochemical deposition", *Journal of Micromechanics and Microengineering*, Vol.12,2002, pp.271-279.
7. S.H. Yeo and M. Murali, (2003) "A new technique of using foil electrode for micro electrodischarge machining", *Journal of Micromechanics and Microengineering*, Vol.13, pp.N1-N5.
8. S.H. Yeo and H.Y. Zhang, (2003) "Development of a novel sonophoresis microdevice", *J. of Biomedical Microdevices*, Vol.5, No.3, pp.201-206.
9. J.H. Choo, S.H. Yeo and F.F. Tan., (2003) "Flexible tooling for localized electrochemical deposition with wire electrodischarge grinding", *Microsystem Technologies* (to be published)
10. L.Y. Chua, S.H. Yeo and Y. Lee, (2003) "Effects of magnetic states in recording media on moisture absorption and surface hydrophobicity", *Journal of Magnetism and Magnetic Materials*. (to be published)