

Curriculum Vitae

Dr. Morris T. Murray

Jan 2008

Personal Details

Name: Morris MURRAY

Academic Record:

from 1985 to 1990:

Qualification: Ph.D (part time),
Institution: Melbourne University, Parkville Australia.
Field of Study: Dynamic Properties of Cast, Hypoeutectic Zn-Al Alloys.

from 1977 to 1979:

Qualification: M.Eng.Sc (part time)
Institution: Monash University, Clayton Australia.
Field of Study: Fracture of a Zinc Diecasting Alloy

from 1971 to 1974:

Qualification: B.E. (2nd class honours)
Institutions: Monash University, Clayton, Australia.
Field of Study: Materials Engineering.

Current Position:

Dr Murray is the CEO/President of M. Murray & Associates Pty Ltd.

Awards

- 1979 SDCE (USA) Joint award for Research Excellence in the field of die casting.
- 1995 Service Award from the Australian Die Casting Association for exceptional service to the Industry.
- 1999 Lifetime Member Award of Australian Die Casting Association

Patents

- 1980 "Zinc Aluminium Cast Alloys" Provisional Patent Application No. PE6609.
- 1996 "Adjustable Seat Mounting Mechanism" Patent No PN 3951.
- 1996 "Adjustment Mechanism" Patent No PN 6909.
- 1996 "Magnesium Seat Back " Patent No PN 5822
- 1997 "Magnesium Pressure Die Castings" TW6341
- 2000 "Die Casting Sprue System" TW6836
- 2000 "Aluminium Pressure Casting" TW6861.
- 2000 "Device for High Pressure Casting" TW6920
- 2001 "Apparatus for High Pressure Die Casting" TW7035

2001 "Producing Shaped Metal Parts" TW7067
2001 "Metal Flow System" TW7068
2001 "Improved Magnesium Alloy Castings" TW7069
2001 "Improved Alloy Castings" TW7070
2002 "Pressure Ducting Flow System" TW7148

Editor

Editor of the Australian Die Casting Association Bulletin for 16 years and assisting the present editor for the past 2 years.

Committee Positions

- Corporate Committee Board member of the Australian Die Casting Association since 1990.
- Victorian Committee Member of the Australian Die Casting Association since 1981.

Publications

Refereed Papers to either Journals and International Conferences

(A = Main Author, B = Equal Author, C = Minor Author)

- B T Abbott, M T Murray, G L Dunlop, L F Hansen, AM-lite: a new magnesium alloy with improved quality at lower cost (2005), 13th Magnesium Automotive and End User Seminar, Aalen, September 2005
- B M A Gibson, C J Bettles, M T Murray, G L Dunlop, S P Cashion (2005). AM-HP2: a new magnesium alloy with improved diecastability and creep strength for powertrain applications, 13th Magnesium Automotive and End User Seminar, Aalen, September 2005
- B G. Dunlop, T Abbott, M. Murray, C Kettler, T Fuest, G Stoesser (2006). AM-lite – an innovative new alloy opens fresh opportunities for magnesium applications. Intl Conf on magnesium and its alloys, Dresden 2006
- B G L Dunlop, T Abbott, M T Murray, C J Bettles, M A Gibson (2006). New magnesium diecasting alloys for decorative and powertrain applications (2006). 63rd IMA World Magnesium Conf, 24-33
- B T Abbott, G Dunlop, T Sweder, S Wojciechowski (2006). AM-lite – a new light weight cost effective alloy for decorative applications, Light Metals Age.
- B T Sweder, T Abbott, G Dunlop, M Murray, C Bettles, M Gibson (2006). AM-lite and AM-HP2 – new magnesium alloys offer new opportunities. SAE paper 06M-459, Journal of Materials
- C. T Abbott, M Murray, G Dunlop (2006). AM-lite: a new magnesium diecasting alloy for decorative applications, Materials Technology 2006, Eds AA Luo, N R Neelameggham and RS Beals, TMS, 481-485
- B M A Gibson, C J Bettles, M T Murray, G L Dunlop (2006), AM-HP2: a new high pressure diecasting alloy for automotive powertrain

- applications, *Materials Technology 2006*, Eds AA Luo, N R Neelameggham and R S Beals, TMS, 327-331
- B C Kettler, T Abbott, M Murray, G Dunlop, T Fuest, G Stoesser (2006), Surface finishing of AM-lite for replacement of zinc, aluminium, Mg AZ91D and plastics in decorative applications (2006), 14th Magnesium Automotive and End User Seminar, Aalen, September 2006
- B M Gibson, M Easton, V Tyagi, M Murray, G Dunlop (2008), Further improvements in HPDC Mg alloys for powertrain applications, *Materials Technology 2008*, Eds M O Pekguleryuz, N R Neelameggham, RS Beals and E A Nyberg, TMS, 227-232
- B T Abbott, M T Murray, G L Dunlop, L F Hansen, AM-lite: a new magnesium alloy with improved quality at lower cost (2005), 13th Magnesium Automotive and End User Seminar, Aalen, September 2005
- B M A Gibson, C J Bettles, M T Murray, G L Dunlop, S P Cashion (2005). AM-HP2: a new magnesium alloy with improved diecastability and creep strength for powertrain applications, 13th Magnesium Automotive and End User Seminar, Aalen, September 2005
- B G. Dunlop, T Abbott, M. Murray, C Kettler, T Fuest, G Stoesser (2006). AM-lite – an innovative new alloy opens fresh opportunities for magnesium applications. Intl Conf on magnesium and its alloys, Dresden 2006
- B G L Dunlop, T Abbott, M T Murray, C J Bettles, M A Gibson (2006). New magnesium diecasting alloys for decorative and powertrain applications (2006). 63rd IMA World Magnesium Conf, 24-33
- B T Sweder, T Abbott, G Dunlop, M Murray, C Bettles, M Gibson (2006). AM-lite and AM-HP2 – new magnesium alloys offer new opportunities. SAE paper 06M-459, *Journal of Materials*
- A T Abbott, M Murray, G Dunlop (2006). AM-lite: a new magnesium diecasting alloy for decorative applications, *Materials Technology 2006*, Eds AA Luo, N R Neelameggham and RS Beals, TMS, 481-485
- B M A Gibson, C J Bettles, M T Murray, G L Dunlop (2006), AM-HP2: a new high pressure diecasting alloy for automotive powertrain

- applications, *Materials Technology 2006*, Eds AA Luo, N R Neelameggham and R S Beals, TMS, 327-331
- B C Kettler, T Abbott, M Murray, G Dunlop, T Fuest, G Stoesser (2006), Surface finishing of AM-lite for replacement of zinc, aluminium, Mg AZ91D and plastics in decorative applications (2006), 14th Magnesium Automotive and End User Seminar, Aalen, September 2006
- B M Gibson, M Easton, V Tyagi, M Murray, G Dunlop (2008), Further improvements in HPDC Mg alloys for powertrain applications, *Materials Technology 2008*, Eds M O Pekguleryuz, N R Neelameggham, RS Beals and E A Nyberg, TMS, 227-232
- B Mobley C., Brevick J., Esdaile R.J., Murray M.T., Rodrigo D., “The Effect of Coatings on Selected Mechanical Properties of Magnesium Alloy Die Castings”, *Die Casting Engineer*, August 2002.
- B Tian C.G., Miller, P., Murray, M.T., “Characterization of a new type of inclusion in an aluminium high pressure diecasting alloy”, *Jnl Mat. Sc. Letters*, 21, 2002, 185-191.
- B Tian, C.G., Murray, M.T. “Non-Metallic Inclusions in Metallic Materials: Their Effect, Detction and Removal” *Materials Forum: Materials Processing*, pp 35-40, 1999.
- A Murray, M.T., Jahedi, M.Z., Nguyen, T.T., “Die Casting of Aluminium- The Next Phase” Invited Paper for *Materials Forum: Materials Processing*, 25-26 November 1999, Melb. Australia.
- A Luxford, G., Bardsley, B, Murray, M.T., “The Interaction of Industry and Research- A Case Study” *Trans. of 20th International Die Casting Congress and Exhibition*, Cleveland, USA, 1-4 Nov. 1999, Paper No.T99-023.
- B Rodrigo, D., Murray, M.T., Mao, H., Brevick, J.R., Mobley, C., Esdaile, R., “Characteristic Microstructural Features of Die Cast Magnesium Alloys” *Trans. of 20th International Die Casting Congress and Exhibition*, Cleveland, USA, 1-4 Nov. 1999, Paper No.T99-064.
- B Law, J., Murray, M.T., Tian, C., “Experiences in the Measurement of Molten Metal Quality in a High Pressure Die Casting Foundry”, *Trans. of 20th International Die Casting Congress and Exhibition*, Cleveland, USA, 1-4 Nov. 1999, Paper No.T99-072.

- C Wang, L., Rohan, P., Murray, M.T., "Porosity Re-Distribution by Molten Metal Transport Due to Variations in Die Cooling", Trans. of 20th International Die Casting Congress and Exhibition, Cleveland, USA, 1-4 Nov. 1999, Paper No.T99-074.
- C Gershenzon, M., Rohan, P., Murray, M.T., "Formation of Cold Flakes in Aluminium High Pressure Die Casting", Trans. of 20th International Die Casting Congress and Exhibition, Cleveland, USA, 1-4 Nov. 1999, Paper No.T99-085.
- B Rodrigo, D., Murray, M., Mao, J., Brevick, J., Mobley, C., "Effects of Section Thickness and Microstructural Features on the Mechanical Properties of Die Cast AZ91D and AM60 Magnesium Alloy Test Bars", Society of Automotive Engineers Congress and Exposition, Detroit, Michigan, USA, March 1-4, 1999, Paper No 1999-01-0927.
- C Mobley, C., Mao, H., Brevick, J., Chandrasekar, V., Rodrigo, D., Murray, M.T., "Microstructural Characteristics of Die Cast AZ91D and AM60 Magnesium Alloys", Society of Automotive Engineers Congress and Exposition, Detroit, Michigan, USA, March 1-4, 1999, Paper No. 1999-01-0928.
- C Mao, H., Brevick, J., Mobley C., Chandrasekar V., Rodrigo D., Murray M., Esdaile R., "Microstructural Characteristics of Die Cast AZ91D and AM60 Magnesium Alloys", SAE International Congress & Exposition, Detroit, USA, March 1-4, 1999, Paper No 1999-01-0928.
- B Rodrigo D, Murray M., Mao H., Brevick J., Mobley C., Chandrasekar V., Esdaile R., "Effects of Section Size and Microstructural Features on the Mechanical Properties of Die Cast AZ91D and AM60B Magnesium Alloy Test Bars", SAE International Congress & Exposition, Detroit, USA, March 1-4, 1999, Paper No 1999-01-0927.
- B Nguyen. T.T., de Looze, G.R., Murray, M.T., Esdaile, R.J., "Research Developments in the Low Pressure Die Casting of Automotive Components", AFS Transactions 97-68, pp 833-841, 1997.
- B Sequeira, W.P., Murray, M.T., Dunlop, G.L., StJohn, D.H., "Effect of Section Thickness and Gate Velocity on the Microstructure and Mechanical Properties of High Pressure Die Cast Magnesium Alloy AZ91D", Automotive Alloys, A Special symposium, TMS Annual Meeting and Exhibition, Orlando, Florida, USA, Feb. 9-13, 1997.

- C Esdaile, R.J., Nguyen T.T, de Looze G.R., Murray, M.T., "Low Pressure Die Casting- Past, Present and Future", ASM 1st Intl Conf. In Process Tech, St Louis, USA, March 1997.
- A Murray, M.T., Sequeira W.P., D'Allesandro R., "Properties and Design of Castings in Magnesium Alloy AZ91D", Society of Automotive Engineers International Congress and Exposition, Detroit, Michigan, Feb. 26-29, 1996, Paper No 960420.
- B Baressi, J., Chen, Z., Davidson, C., Murray, M., Nguyen, T., StJohn, D., Thorpe W.R., "Casting of Aluminium Alloy Components", Metals Forum, 53-70, 1996.
- B Newland, C.A, Murray, M.T., "Strain Rate Dependent Behaviour of Magnesium Based Alloys", First Australasian Congress on Applied Mech., Melb. Australia, 21-23 Feb., 1996.
- A Murray, M.T., "Simulation and Modelling Techniques in the Production of High Pressure Diecastings", Joint Australia-Korea Workshop on Manufacturing Technology, Australian Academy of Science, 20-21 Nov., 1995.
- B Baressi, J., Chen, Z., Davidson, C., Murray, M., StJohn, D., Nguyen, T., Thorpe, W. "Casting of Aluminium Alloy Components", submitted to Metals Forum, Inst. of Metals and Materials Australasia.
- A Murray, M.T., Sequira, W.P., D'Allesandro, R.D, "Properties and Design of Castings in Magnesium Alloy AZ91D", SAE International Congress and Exposition, Detroit, Feb 26-29, 1996, Paper No 960420.
- A Murray, M.T., Griffiths, J.R., "The Design of Feed Systems for Thin-Walled Zinc Pressure Diecastings", Met. Trans. B., Vol 27B, Feb. 1996, pp 115-118.
- A Murray, M.T., Sequeira, W.P., D'Allesandro, R.D., "Design of Magnesium Castings", First Int. Conf. on Casting and Solidification of Light Alloys, Gold Coast, Aust., 30-31 August 1995.
- A Murray, M.T., Sequeira, W.P., D'Allesandro, R.D., "Properties and Design of Castings in Magnesium Alloy AZ91D", International Congress and Exposition, Indianapolis, Oct. 2-5, 1995, Paper No 95-0131.
- A Murray, M.T., Bousfield, K.N., "Damping Properties of Pressure Diecasting Alloys", The 16th NADCA International Die Casting Congress, Detroit USA, Sept. 30-Oct 3, 1991.

- C Shephard, R.K., Murray, M.T., Houghton,M.E., ClarkG.M., "Scanning Electron Microscopy of Chronically Stimulated Platinum Cochlear Electrodes", *Biomaterials*, Vol.6, pp237-242, July, 1985.
- C Asquith.S.J., Bousfield, K.N., Esdaile,R.J., Murray,M.T., "The Effect of Processing Conditions on the Mechanical Properties of Some Diecasting Alloys", *Trans. 13th SDCE Congress, Milwaukee*, Paper G-T84-032, June 1985.
- B Houghton,M.E., Murray, M.T. "An introduction to Zinc Alloys" *Metals Forum Vol.6,No.4*, pp211-215, 1984.
- A Griffiths, J.R., Murray, M.T., Parker, B.A., "The Fracture of a Zinc Diecasting Alloys" *Metals Forum, Vol.6., No.4*, 226-233, 1984.
- C Shephard,R.K., ClarkG.M., Pyman,B.C., Webb,R.L., Murray,M.T., Houghton,M.E., "Histopathology Following Electrode Insertion and Chronic Stimulation", *Cochlear Implants*, ed.R.Schindler and M.Merzenich, Raven Press N.Y.,1983 and also at 19th Anniversary Conf. on Cochlear Implants- International Symp. held at Univ. of California, San Francisco, 22 to 24 August, 1983.
- C ShephardR.K., Webb,R.L.,Clark,G.M., Pyman, B.C., I-firsbom,M.S., MurrayM.T., Houghton,M.E., "Implanted Material Tolerance Studies for a Multiple-Channel Cochlear Implant" *Second Int. Symp. on Cochlear Implants*, 24 Sept. 1983, Paris and also in *Acta Otolaryngol (Stock) Suppl. 411:71-1981*.
- C Shephard,R.K., MurrayM.T., Houghton,M.E., "Scanning Electron Microscopy of Chronically Stimulated Intracochlear Electrodes", *IUPS Satellite Symp. on Mechanisms of Hearing held at Monash Univ., Clayton*, 24 to 26 August, 1983.
- A Murray, M.T.,"The Fracture and Engineering Properties of A Zinc Diecasting Alloys", *Trans 11th International Diecasting Congress SDCE, Cleveland*, June 1981, Paper G-T81-081.
- B Davis,A.J., Murray M.T., "Cavitation Effects and Die Erosion in the Diecasting of Zinc Alloys', *Trans. 11th International Congress, SDCE, Cleveland*, June 1981, Paper G-T81-123.
- B Robinson,P.M., Murray,M.T., "The Role of Porosity and Surface Finish in Determining the Mechanical Behaviour of Light-Weight Castings", *Trans.Soc.Diecasting Eng., Paper No.,G-T79-023*, 1979.

- B Robinson,P.M., Murray,M.T. "Control of Metallurgical Properties of Light Weight Castings" Trans. Soc. Diecasting Eng.,Paper No. G-T79-042, 1979.
- B Murray,M.J.,MurrayM.T., Sare,I.R., "Fracture Toughness Testing of Metallic Materials" Jnl Aust Inst. Metals,22 (2), 126-131,1978.
- B Robinson,P.M., Murray, M.T.,"The Structural of Lightweight Zinc Diecastings" Trans Soc.Die Casting Eng., Paper No G-T77-081, 1977.
- B Robinson,P.M., Murray,M.T. "The Fracture Toughness of Light weight Zinc Diecastings", Trans Soc. Die Casting Eng., Paper No G-T77-082,1977.

B. Non-Refereed Papers

(A = Main Author, B = Equal Author, C = Minor Author)

- C Tian, C.G., Miller P., Murray, M.T. "Characterisation of a new type of Inclusion in an Aluminium High Pressure Diecasting Alloy" Materials Science Letters, 1998.
- B Sequeria, W.P., Murray, M.T., Dunlop, G.L., "Effect of Section Thickness and Microstructure on the Mechanical Properties of High Pressure Die Cast Magnesium Alloy AZ91D", Manchester Conference of ASM, April 1996, Manchester, England.
- B Esdaile, R.J., Murray, M.T., Nguyen, T.T., "Low Pressure Die Casting and Its Place in Lean Manufacturing", Australian Die Casting Association, National Conference, Melb., Australia, 2-4 June, 1993.
- B Esdaile, R.J., Murray, M.T., Nguyen. T.T., "Low Pressure Die Casting of Components for the Automotive Industry", Materials in the Automotive Industry, IMMA Conference, Melb. 24-26 June 1992.
- B Esdaile, R.J., Murray, M.T., "Casting Processes for Near Net Shape Forming", Second Australian Pacific Course and Conference on Aluminium Melt Treatment and Casting, University of Melb, Australia, 1-4 July, 1991.
- A Murray, M.T., McKeon, L., Asquith, S.J., Bousfield, K.N., "Solidification of an Aluminium Gravity Casting- A Successful

- Collaboration Between a Manufacturer and a Government Research Organisation", *Materials Aust.*, Jan. 1991.
- B Hopkins,M.A., Murray, M.T., "Integration of Component Design and Die Thermal Control", *Materials Aust.*, pp 18-22, Nov./Dec. 1989.
- B Wilson,G., Owen,R. Esdaile,R. Murray,M.T., "The Australian Aluminium Die Casting Industry, 1980-1990 -An Industry Association View", IMMA Conf. on "Trends in the Aluminium Industry", Melb., 1990.
- B Hopkins,M.A., Murray, M.T., "Integration of Component Design and Die Thermal Control" ADCA Annual Conf, Oct., 1989.
- A Murray, M.T. "Simple Stress Analysis with a Personal Computer" ADCA/AIMF 1st Joint Conf., Oct. 1987, Melb, Australia.
- A Murray, M.T. "Heat Treatment of Diecasting Alloys- First Principles", 3rd National Conference of the Australian Diecasting Association , Aug. 31st-Sept. 3rd, 1986, Melb., Australia.
- A Murray, M.T., 'Designing a Casting -Historical or Hysterical?' *Trans. of the Second South Pacific Diecasting Congress, Sydney, 20-25 Feb, Paper No.83-24, 1983*
- B Murray,M.T., Spink,J.A., "SEM and Auger studies of Zinc-Rich Diecast Materials", Paper presented to the 2nd Applied Physics Conf of Aust. Inst. of Physics, Melb., 1981.
- A Murray, M.T., "The Mechanical Properties of Some Zinc-Based Casting Alloys", *Trans. First South Pacific Diecasting Conf., Melb. Australia, Paper No 80-15, 1980.*
- B Davis,A.J., Murray,M.T., Bennett,W.J., "The Effect of Operating and Gate Design on the Fill of 4mm Thick Flat Plate Castings", *Trans. First South Pacific Diecasting Conf, Melb., Australia, Paper 80-10, 1980*
- A Murray,M.T., Tobin,P., "The effect of Feed System Design and Cavity Fill Conditions on the Morphology and Mechanical Properties of 'Mick(4mm) Castings of Zinc Alloy 3", *Trans. First South Pacific Diecasting Conf, Melb. Paper No, 80-11, 1980.*

- A** Murray M.T., "Fracture Mechanics in Automotive Castings", Proc. of Conf on Fracture Mechanics, An Introduction to Principles and Practice, Brisbane, Sept. 1978.
- A** Murray, M.T., "Prevention of Fracture of Zinc Diecastings" Metals Aust., pp303-304, Jan. 1978(Reprint of Conf Paper).
- B** Robinson, P.M., Murray, M.T., "The Influence of Processing Conditions on the Performance of Pressure Diecast Automotive Components" Metals Forum, 26, 1977.
- A** Murray, M.T., "Prevention of Fracture in Zinc Diecastings" 1977 Conf. of Aust. Fracture Group, Melb., 1977.

C. Talks... (Not to Conferences)

“Die Casting- Advancing the Understanding”- ADCA meeting in NSW and Victoria 2006.

“Technology of Die Casting” Invited all-day seminar to Interlock, New Zealand, June 2002.

“International View on High Pressure Die Casting” talk to the Australian Die Casting Association (ADCA), Feb 2000, Melb.

“Ultra- High Quality Die Casting” part of a one day seminar held at both the Victorian and NSW chapters of ADCA, 1999 .

“Research at CSIRO into Light Metals” Presented to the Ohio State University Manufacturing and Metallurgy Dept. 1998

“Innovations in Die Casting” Invited all-day seminar for the Denmark Institute of Advanced Manufacturing, Denmark, 1998.

"Magnesium and High Pressure Die Casting Technology", Joint Korea-Australian Automotive Symposium, Seoul, Korea

"Light Metals Die Casting at CSIRO", IMMA Meeting, Melb., 1997.

"Light Metal Research in Australia", Ford Research Centre, Detroit, USA, 1996.

"Magnesium and its Behaviour", Symposium held at GM Technical Centre, Detroit, USA, 1996.

"Magnesium Recycling- Certification and Production", FIAT-TEKSID SPA, Turin, Italy, 1996.

"Working With the Automotive industry", CAST /Industry Meeting 1995.

'Die Casting-The New Option", SAE Meeting on "Manufacture of Vehicles and Components", St. Kilda, Melbourne, 25th May, 1994.

"Aspects of the Low Pressure Process", ADCA Meeting, Adelaide, May 28-29, 1992.

"Designing in Die Casting", one of two keynote speakers at the meeting of ADCA and Project AMTEC Seminar, Melb. , April, 1992.

"Die Casting Advances in Australia", to Timex Corp., Arkansas USA, 1992.

"Solidification and Its Effects on Microstructure in Al-Si based Alloys", Denmark Institute of Tech., Metallurgy Dept., Denmark, 1991.

"Pressure Die Casting- The Art and the Science", Invited Seminar given to the Scandinavian Die Casting Association, Denmark, 1991.

"Die Casting Defects- Cause and Effects", Joint AIMF and ADCA Seminar, 16th August, 1990.

"Properties of Metal Diecastings- Optimisation for Design" one of three keynote speakers for the Design Seminar, 17th May 1990 (Melb) and 14th June 1990 (Sydney).

"Solidification Modelling in Gravity Diecasting", given to the ADCA, 15th May, 1990.

"Achievements of The Division of Manufacturing Technology", given to the School of Eng., Univ. College of Central Qld., Jan. 1990.

"Non-Ferrous Casting Update", given to the Adelaide Section of the Aust. Foundry Inst. Monthly Meeting, 19th August 1987.

"Casting a Viable Manufacturing Process?" given to the Man. Branch of I.E.Aust and I.Prod.E. Monthly Meeting, 12th June, 1985.

"Casting in the U.K." given to the Aust. Die Casting Assoc. A.G.M., E.Z.House, Melb., Dec. 1984.

"The Effect of Morphology on the Fracture Toughness of Zinc Based Alloy 3", Monash University Mat. Eng. Colloquia, 1979.

"Demonstration of the Use of the Double Torsion Bend Test", Aust. Institute of Metals Conf., Melb. 1978, "Education in Fracture" series.

"Zinc Based Alloy 3 as a Fibre Reinforced Composite" University of Brisbane (Invited) 1978, A Symposium on "Introduction to Fracture Mechanics- Castings", Brisbane Branch of Aust. Inst. Metals, Education Series on Introduction to Fracture Mechanics, 1978.

