



PM Personality: Dr. W. Brian James

Following a stellar 40+ year career in the ferrous PM industry, British-born Dr W. Brian James was appointed Editor-in-Chief of the International Journal of Powder Metallurgy, published by MPIF/APMI, Princeton, NJ, at the beginning of 2015. MPR Consulting Editor Joseph Capus caught up with him at the EURO PM2015 Congress in Reims, France after James had received the 2015 EPMA Distinguished Service Award.



Like many others before him, Brian James first became interested in metallurgy after reading the book, “Metals in the Service of Man” by British authors, Street and Alexander. The fact that so much could be determined by examining the microstructure of a material completely captivated him. He went on to study metallurgy at the University of Manchester Institute of Science and Technology (UMIST), in the UK and a series of lectures on powder metallurgy by Dr Tom Davies in his final year was the initial introduction to PM. For his PhD at UMIST he worked on the development of dispersion strengthened zirconium alloys using powder metallurgy processing and got to learn about powder

mixing, compaction, vacuum hot pressing, and extrusion of metal powders.

MPR: How did your career in PM develop?

Jobs were hard to come by after I received my PhD in 1972, and I was lucky that my supervisor, Tom Davies, had a friend who worked at Round Oak Steel in Brierley Hill in the West Midlands, UK, and knew of an opportunity there. I started as a Development Engineer in the R&D Department of Round Oak Steel in January 1973 and worked on the development of spherical powders for use as the carrier for the toner (ink) in Xerography. I modified the atomizing conditions in the plant used to make high carbon iron shot for use by Round Oak Steel Powders, and developed a method for separating spherical from non-spherical particles on a production scale. A plant was set up to make three size-ranges of spherical particles for Xerox—and I learnt a lot from their quality engineers during my interaction with them as part of the product development process.

I moved to GKN Technology in Wolverhampton at the end of 1976 to work as a Product Development Engineer in support of the powder-forging development program. A focus of the program at that time was the development of powder-forged connecting rods for Porsche. We looked into the factors influencing the fatigue performance of the PF connecting rods and studied the effect of various thermo-mechanical processing treatments on the mechanical properties of PF materials in general. I was also in charge of a pilot scale water atomization unit and we developed and experimented with numerous prealloyed low-alloy steel powders. At GKN Technology I reported to Gordon Brown, well known for his work on steel hardenability as well as for his pioneering work on the development of materials for powder forging. Gordon took me with him for a visit to the USA in June 1980, which included a

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visit to Hoeganaes Corporation where I first met Ian White (later to become President of Hoeganaes Corporation), Bob Powell, and Ross Holmes. I presented a paper at the MPIF PM Conference in Washington DC, on the automated measurement of nonmetallic inclusions in powder-forged steels and subsequently made a visit to the new Hoeganaes plant in Gallatin, TN. Shortly after returning home I received a call asking if I would be interested in working in the R&D department at Hoeganaes Corporation in New Jersey, USA.

My wife, Elaine, and I, along with our two young children, moved to Cinnaminson, NJ at the end of February 1981 and I took up a position as a Senior Development Engineer in the R&D Department reporting to Ulf Gummesson. I became Manager, Product Development later that year and worked on developing the mechanical properties of various powder-forged materials, helping customers with PF development programs in a pilot powder-forging facility, and developing new alloy powders using a pilot plant atomization unit. I was working very closely with Tom Murphy in the metallographic laboratory and he and I were like “kids in a candy store” when asked to go out and purchase a scanning electron microscope and automated image analysis equipment for the newly refurbished and expanded R&D laboratory. That began an ongoing friendship with Tom and I have been using his wonderful metallographic microstructures in my presentations ever since.

Much of my work tended to be in support of customer projects and towards the end of 1985 I transferred to the Sales & Marketing Department to become Manager PM and PF Products, working with Bob Powell to coordinate technical support for customers. In addition to supporting customers in the US and Canada, it was at this time that I began working with customers in Brazil and Argentina helping resolve technical problems and conducting training programs and technical updates.

I developed a Ferrous PM School program for General Motors, Ford Motor Co., and Chrysler, which was conducted for many years, and also developed a similar program for customers. The introduction of Ancorsteel[®] 85 HP (a highly compressible pre-alloyed low-alloy steel powder) in 1990, shortly after the commercialization of ANCORBOND[®] (binder-treated) premixes, led to an exciting period of growth in the ferrous PM industry. Hybrid alloys were the fastest growing product seen by the industry for a long time and led to many new opportunities for PM parts. The introduction of warm compaction processing and subsequently warm-die compaction meant that it was a very exciting time to be involved in PM.

With the GKN plc acquisition of Hoeganaes Corporation my responsibilities shifted in 1999 from the USA to Europe, Asia, and South America. As Manager International Technical Service, I helped Klaus Vossen (Sales Manager in Europe) and Bill Michael (Senior VP Sales & Marketing) to introduce customers in Europe to the Corporation's powders and in setting up a technical support team in Europe. Most of my time for the remainder of my employment at Hoeganaes was spent in Korea, China and Taiwan introducing the products offered by the company and providing customers with help in troubleshooting problems, making material selections, and developing new PM applications. In addition to setting up technical support, I started providing Ferrous PM School programs in each of these countries as well as annual technical

updates that highlighted new product introductions or enhancements made in processing of premixes or products. On numerous occasions I also conducted a Ferrous PM Training Program in India and visited many customers in that country.

MPR: What about your current position and responsibilities?

I retired from Hoeganaes Corporation at the end of June 2013—right after the POWDERMET2013 PM conference in Chicago but came back in 2014 to be Technical Co-Chair of the PM World Congress in Orlando, FL.

In retirement I continue to be involved with the PM community helping to develop material and test method standards, co-chairing the MPIF Basic Short Course, and teaching at the annual European Powder Metallurgy Association Summer School (something I have been pleased to be involved with since 2005).

Starting with the first issue of 2015, I became Editor-in Chief of the International Journal of Powder Metallurgy, taking over from my good friend Alan Lawley who held the position for thirty years, and I will do my best to maintain the high quality of the journal.

I continue to be a member of the technical program committee for the annual MPIF POWDERMET conferences and still really enjoy attending the PM conferences.

MPR: In addition to your recent EPMA award, you have previously received Distinguished Service to PM and Fellowship awards from MPIF and APMI International. Tell us more about your activities in professional and standards organizations?

My role as Editor-in-Chief of the IJPM was mentioned previously along with my role at the Basic PM Short Course. I am still active in ASTM Committee B09 and its sub-committees that develop material and test method standards for powder metallurgy, and have been chairman of subcommittee B09.11 on Near Full Density Materials since 1986.

I chair the Metal Powder Producers Standards Committee and have been Chairman of the MPIF Standards Committee since 2009. I was also active in ISO TC 119 for many years but stepped down from being the liaison consultant for the USA on subcommittees SC 2, SC 3, and SC 5 upon my retirement.

More recently, I helped to edit the introductory section of the new ASM Handbook, Volume 7 on Powder Metallurgy and wrote a number of articles for inclusion in various sections of the handbook.

MPR: What major changes and trends have you seen during your career in the PM industry?

When I first started in the PM industry, a green density of 6.8 g/cm³ was considered a high density—which it was for an industry that had primarily started by making self-lubricating bearings at densities of 5.8–6.2 g/cm³. Today, with warm and warm-die compaction, green densities of 7.4 g/cm³ are now commercially feasible.

Powder forging is now an established metalworking process and millions of powder-forged connecting rods have been and continue to be made. The material of choice today for PF connecting rods is copper steel—a change from the quench-hardened and tempered, prealloyed low-alloy steel rods that we made for Porsche.

Metal injection molding (MIM) is also an established process for making PM parts and has grown into a global industry for a wide range of applications.

Sinter-hardening is now a widely used process for making ferrous PM parts and there have been significant developments in low-alloy steel powders specifically developed for this process. We have come a long way from the initial parts made using FLC-4608 (pre-alloyed Ni-Mo steel powder with added copper and graphite).

Greater use is being made of high-temperature sintering—1200°C and above, and this has opened the door for the use of lean alloys that use elements such as chromium, silicon, and manganese. I believe that this trend will continue. Better sintering will permit the use of leaner alloys while maintaining performance levels.

Nano-technology has become a household word, as has additive manufacturing (AM), the latest buzzword in the industry. There is an incredible amount of activity in AM, and metal AM has already established itself as the method of choice for a number of applications.

There has been a considerable amount of consolidation in the PM industry with the disappearance of many famous PM company names—though many still remain. The PM industry is much more globally oriented than it was back in the 1960s.

The scarcity of younger people active in the industry is of concern. Many no longer appear to see the need for participation in technical societies (APMI International, ASM International for example) and fewer companies seem to support activities such as the development of standards (at least when it comes to sending people to the meetings). We need to do a better job of promoting

powder metallurgy and its opportunities at schools and universities and of providing opportunities for young engineers to learn about our fascinating technology.

I look forward to maintaining my involvement with the PM community and to helping with the development of young engineers for the industry via training courses, PM school programs, and seminars.

MPR: Apart from your professional activities, what are your current interests and hobbies?

Soccer...having finally accepted the fact that I am not going to make a living as a professional footballer, I am glad that I can at least watch English Premier League matches on TV along with Champions League games—I don't even feel guilty when I stop work on PM projects to watch games in the mid-afternoon.

Our family became "Phillies" fans very shortly after we arrived in the USA and I watch many of their games on TV and go to a number of games each year.

I am an avid reader (my Kindle was a wonderful gift from my wife—although I did, however, take some time to become convinced to change from reading "real" books—carrying numerous paperbacks to and from Asia soon convinced me though) and enjoy sitting on the back patio in the spring and summer months reading murder-mystery novels and historic fiction.

My wife, Elaine, and I love spending time with our son and daughter and their respective families. Our grandson is now 2½-years old and another grandson is on the way. They will keep us busy and young-at-heart—who needs to go to the gym when you have young children to try to keep up with and keep an eye on?