

Dr Johan Verbeek

BEng (Chemical Engineering); MEng (Chemical Engineering); PhD (Engineering), University of Pretoria, South Africa, MIPENZ

Taking materials that would otherwise be thrown away and turning them into useful products has become the research focus for Dr Johan Verbeek. Since his tertiary days in South Africa, Johan's wealth of knowledge in the engineering field of sustainable products has skyrocketed, which has led to a number of innovative developments in the engineering industry.

Johan began his engineering study with a Bachelor of Engineering in Chemical Engineering at the University of Pretoria in South Africa. His enthusiasm for engineering led him to a Masters of Engineering, also in Chemical Engineering. His masters topic looked at biodegradable polymers and using plastic soft drink bottles to make bio-friendly materials. It was at this point that Johan discovered his passion for working in the field of sustainability. He followed his ME with a PhD in Engineering, also at the University of Pretoria and this time looked at polymer composites and using mining waste to make materials such as gib board.

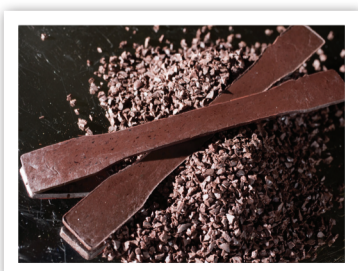
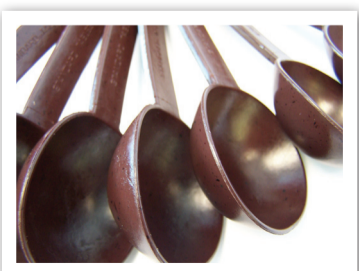
In 2003 Johan, his wife and two young daughters made the move to New Zealand, where he had been offered a job as a lecturer in the University of Waikato's School of Engineering.

Nearly 8 years later Johan is still enjoying Waikato and is now a Senior Lecturer and the convener of the Chemical & Biological Engineering programme. He has also won and been nominated for various awards, including being a finalist as an emerging scientist in the 2011 Kudos awards for his work turning low-value animal protein into high-value biodegradable plastics. In addition he won the Bayer Innovators Award in the Agriculture & Environment category in 2008.

While at Waikato he has been involved in research into using chicken feather fibers to reinforce thermoplastics. Another topic is the recovery of proteins from wastewater using nanoclay. Once the proteins are in the clay, the clay is used to strengthen protein plastics. A further research avenue and one that has been picked up as a commercial business opportunity, is the use of bloodmeal to make bioplastics. The material can be used in agricultural-type applications such as seedling trays, biodegradable plant pots, pegs and vine clips. The discovery is being commercialised by Novatein Ltd through work with WaikatoLink - the commercial arm of the University of Waikato. Novatein Ltd is in the process of registering world-wide patents and also working to license the technology for manufacture in New Zealand.

Work is currently underway to decolour the bloodmeal, so that rather than a brown colour, the bloodmeal is more of a yellow tone. Dr Kim Pickering and Dr Mark Lay also work on these environmentally-themed research projects.

During his spare time Johan enjoys running, playing squash, reading and being outdoors. In his South African hometown of Pretoria he was a full day's drive from the coast, and therefore loves living in Hamilton where the beach is less than an hour away.



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato