

Thought Leader Spotlight

Bas Smeulders



Biography

Bas Smeulders is a Research Scientist based at the Quaker Houghton Center of Innovation lab in Uithoorn, The Netherlands.

He graduated from the University of Nijmegen (NL) with a degree in physical chemistry. At the University of Twente (NL), he completed his PhD in rheology and continued his postdoctorate studies in rheology at University of Cambridge (UK). Bas has been a frequent presenter at conferences in the steel industry and has published multiple papers.

Fast Facts

- **Keys to Success:** "You need a good team of people for advice, collaboration, sparring, and open discussions. It is very pleasing that within Quaker Houghton, these conditions are easily satisfied!"
- Co-authored the chapter, "Roll Cooling and Lubrication in Cold Rolling" in The Making, Shaping and Treating of Steel, 11th ed. Flat Products Volume
- Published seven papers in Iron & Steel Technology
- Enjoys cycling, playing guitar, and Amsterdam history

Learn More about Bas

What are you presenting at the AIST conference - Cold Sheet Rolling session?

"Aspects of Boundary Lubrication in Advanced High Strength Steel Rolling" is the paper that addresses the importance of boundary lubrication in controlling roll forces in cold rolling. Friction is reduced by molecule adsorption, and local adhesion is minimized by chemical reactions at the contacting surfaces. Pilot mill trials on advanced high-strength steel showed clear differences in roll force between lubricant emulsions only varying in boundary lubrication properties. The coefficient of friction in these trials was analyzed with an advanced "tribological roll bite model." The friction was shown to include contributions of elastohydrodynamic lubrication, micro-plasto-hydrodynamic lubrication, sliding boundary friction and unprotected friction, the latter varying between the lubricants. The method assists lubricant development based on understanding of lubrication mechanisms.

What drives your interest in metals research?

It is driven by the fact that some very interesting fields of science come together such as tribology, chemistry, metallurgy, and engineering. The topic of steel cold rolling is additionally appealing to me because of the mathematical modelling that can now be carried out by us. An important aspect is surface quality, for which attractive and powerful analysis technical are available such as SEM/EDS and optical profilometry. As I am exploring the topic of aluminum hot rolling, my experience is being expanded with high temperature effectors on metallurgical properties and emulsion behavior under those conditions.

How do you approach research?

Good results can only emerge when you have a good understanding of the customer's process, mechanics, physics, and chemistry. From there, you can start translating mechanisms and conditions into relevant tests, first to validate and screen, but ultimately to develop the optimum product for our customers.

