

Bachelor, Student or Master Thesis



Conventional vs. autogenous nano-grinding of silicon: Energy efficiency

Nano-silicon is increasingly used as a high-performance active material in lithium-ion batteries. A common method for the production of silicon nanoparticles is fine grinding in stirred media mills. Nevertheless, low-wear autogenous grinding, in which the grinding material and grinding media are made from the same material, is a particularly attractive manufacturing process. First results of autogenous grinding of silicon show that, compared to conventional comminution, significantly more specific energy has to be applied to achieve the same product fineness. In this study, product and process parameters will be investigated to minimize the specific energy requirement. Finally, autogenous and conventional grinding will be compared. The following tasks are possible:

- Carrying out experiments to determine product and process related factors influencing specific energy input
- Comparison with conventional grinding
- Economic analysis and technology transfer of the autogenous grinding process

Bachelor, student and master theses can be carried out at any time within the framework of this project by students in the fields of biological, chemical and pharmaceutical engineering, mechanical engineering and chemistry. The processing time can be adapted to the respective requirements.





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Contact:	Marcel Möller
	Tel.: 0531-391-9603
	marcel.moeller@tu-braunschweig.de