

Scale Up-Mechanochemical Synthesis of High Surface Area Alpha-Alumina

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Abstract : The challenges encountered in upscaling the mechanochemical synthesis of high surface area α -alumina are investigated in this study. After lab-scale experiments in shaker mills and planetary ball mills, the optimization of reaction parameters of the conversion in the smallest vessel of a scalable mill, named Simoloyer, was developed. Furthermore, the future perspectives by scaling up the conversion in several steps are described. Since abrasion from the steel equipment can be problematic, the process was transferred to a ceramically lined mill, which solved the contamination problem. The recovered alpha-alumina shows a high specific surface area in all investigated scales.

Keywords : mechanochemistry, scale-up, ball milling, ceramic lining

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