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## Process intensification techniques for the production of nano and submicronic particles at industrial scale

**Marco Stoller**

Sa pienza University of Rome, Italy

Nowadays, nanoparticles are of great interest for the industry due to their numerous possible applications in several fields. Research on this topic seeks to develop many procedures to produce nanoparticles, mostly at lab scale, batch-wise and with low yield. These procedures generally do not suit industrial needs of continuous, high capacity production. Moreover, the product characteristics require targeting narrow particle size distributions and high quality, which is difficult to achieve by traditional equipment. Process intensification techniques aim to minimize plant size of continuous, high yield equipment capable to produce specific sized, high quality nanoparticles, combined with an increase in energy efficiency, safety and cost reduction.

This paper reviews some adopted Process Intensification (PI) techniques for nanoparticles synthesis processes employed in the food and pharmaceutical sector. By reducing the technology transfer gap, nanotechnologies may become convenient and feasible, allowing both industries to achieve the production of higher quality products with particular characteristics without sensibly increasing additional costs. This will represent in the next future a strategic key feature of industries in the global market.

e: [marco.stoller@uniroma1.it](mailto:marco.stoller@uniroma1.it)



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