

Economic and environmental sustainability of antimicrobial textiles

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Hospital-acquired (nosocomial) infections are a major financial and safety issue in the European healthcare system, adding more than 10 million patient days in hospitals in Europe per year and causing three million deaths per year [1,2]. Novel enhanced antibacterial fabric finishing processes based on ultrasound (US) technology address the problem and may provide support to an active infection control program. The proposed sonochemical technology [3,4, 5] is considered for assessing its environmental impact [6] and its economic viability by comparing process involving combinations of different in-situ and ex-situ metal oxide nanoparticles (MeO NPs) synthesis. The investigation based on consequential LCA compares different processing preliminary scenarios as a function characterizing parameters such as process throughput, process speed, power input, labor intensity, time horizon, geographical location of finishing plant. The assessments provide promising results for implementing an efficient scaled up, low impact an economic sustainable processing technology.

References

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