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## Self-cleaning coatings based on nano-structured ZnO

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Coatings for self-cleaning fabrics and garments are becoming progressively important because they point toward the ideal situation where minimal washings, care and repairs are needed. The self-cleaning property will lead to the reduction soap, water and energy required for washings; this reduction is desirable to preserve the resources, the environment and extend the lifetime of fabrics and garments. The self cleaning property of textiles was for many years associated with superhydrophobic surfaces – a phenomenon first observed in the lotus leaf and so named the lotus effect. In this work, we present crystalline nano-structured ZnO clusters, synthesized from a microwave accelerated reaction (Zaman et al; 2013) that were used as a colloidal suspension for the preparation of self-cleaning formulations. The aqueous formulations were applied in a dip-coating process to different textile fabric blends. The intended benefit from such nano-structured ZnO clusters is to produce a micro-roughness and a nano-structure on the surface of the fibers. Wettability studies on the finished fabrics were made by water contact angle measurements and standard test methods such as AATCC 22 (Water Repellency, Spray Test) and AATCC 118 (Oil repellency, Hydrocarbon Resistance Test). Surface morphology analysis was performed by SEM. The effect of repeated washings and resistance to abrasion will also be presented.

## Biography

Dominic Tessier is a renowned industry expert with extensive experience in the field of surface treatments, coatings, polymers and fibers. He is working as a Senior Scientist at CTT Group which involves problem-solving, mentoring, consultation, and the formulation and facilitation of projects. Currently, he is a Professional Chemist, Member of ASTM Technical Committee E35 on Pesticides, Antimicrobials, and Alternative Control Agents and F23 on Personal Protective Clothing and Equipment.

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