BEYOND SIMPLE CURING: APPLICATIONS OF A PHOTOLATENT BASE

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Radiation curing is a well-established technology, with free-radical polymerization forming the core chemistry of most UV-curing applications [1]. Rapid curing at ambient temperature of stable, single component systems is the key value proposition of such systems.. However, owing to inherent limitations efforts are being made to counter these challenges by innovating and exploring new curing concepts. Recently, photolatent bases (PLB) capable of catalyzing a wide variety of crosslinking processes have been introduced as a novel class of photolatent catalysts.

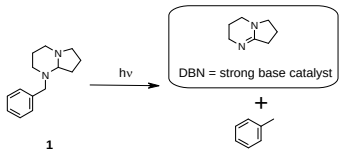
PLBs are not aimed at substituting existing high performance photopolymerization processes. However, anionic photopolymerization is a promising area with its own advantages, comprising the potential of opening new avenues for radiation curing by triggering effects beyond simple curing, which allows the design of novel polymeric materials with additional functionalities [2].

The concomitant crosslinking of an organic matrix and an inorganic precursor results in the efficient formation of organic/inorganic hybrid materials containing well dispersed nanoparticles, combining the properties of an organic network with those of inorganic materials [3]. These hybrid coatings provide potential for applications in advanced coatings [4], such as a corrosion-resistant pretreatment of metal substrates in a primer-less coating system [5].

The photobase can also be used for catalyzing the curing of an organic matrix with concomitant reduction of graphene oxide, providing electrically and thermally conductive coatings [6].

The success of these approaches depends on the availability of suitable materials, especially tailor-made PLBs. A new types of PLB capable of releasing a strong base like DBN [2]. The photolatent DBN derivative **1** [7] is currently in development as a commercial product.

Here we will review selected examples of use of this novel PLB for the design of new materials.



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