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Nanotextured polymers by plasma etching: defining chemistry and topography for superior wetting and optics

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Plasma etching processes can be efficiently utilized for generating a tunable nano-scale texture onto polymer surfaces. This has been exploited in the present work in order to investigate the possibility of tailoring topography features to the right degree for reducing light reflectance, according to the moth eye effect, as well as for determining a transition from wet to non wet contact with water droplets. Results indicate that key parameters like input power, treatment time, kind of feed gas play a different role in defining scale and shape of nanostructures and can be accordingly tuned for the selected application. A transition of wetting regime can be also operated, once given the texture, with a fine variation of the outer chemical character.