This work deals with the growth of III-Nitrides on micro and nano-patterned silicon (111) substrates. The main goal is to simplify the heteroepitaxy of GaN on Si while keeping state of the art III-nitride materials. The originality of this work is to combine the advantages of both NH_3-MBE and MOCVD growth techniques. We firstly evaluated the interest of porous silicon to confine cracks and to behave as a compliant substrate. Despite the issues regarding the structural changes of the porous silicon with the high temperatures necessary for the epitaxial growth of GaN, we demonstrated the growth of high quality GaN layers by growing a silicon layer of few tens of nanometers prior to III-nitride layers. Then, we studied the windowed growth of GaN on silicon substrates masked with dielectric films. We found that this approach can produce high quality crack free GaN (2µm thick) patterns with size up to 500x500 µm² with a dislocation density of few $10^8 cm^{-2}$. Furthermore, crack statistics reveal that a large amount of crack free patterns can be obtained using optimized conditions. Stress analyses of GaN patterns demonstrate a “U-shape” stress distribution where the maximum tensile stress is found in the middle of the patterns and gradually decreases towards the pattern edges. Finally, a comparison with mesa patterned silicon substrates is proposed with identical grown structures. We found that windowed growth is more advantageous regarding growth uniformity and substrate bowing. As a result of this work, LEDs have been fabricated using GaN grown on masked substrates.