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Persepectives on large technologic applications of extremely optimized and differentiated carbon material with multidisciplinary association of different revised solid-state and thin film fundamentals

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Abstract:

Different dramatically ignored recently revised fundamentals we will describe can deeply affect device choice, process optimization and well mastered and understood achievement of requested much improved combined nanomaterial properties.

With association of different recent newly revised multi-disciplinary scientific solid state material fundamentals with applied science and technologic progress, advanced carbon material coatings can be comprehensively differentiated, improved in many combined properties by several order of magnitude, and upscaled. This is especially concerning a) the newly evidenced selective quantum electronic activation of different phase transformation in competition to each-others, b) the refined defect and stress dependent adhesion science c) the role of different sorts of plasma surface interactions on different thin film nucleation and growth and eventual thermal degradation, d) the revised interpretation of characterizing results with different ultimate surface science means and thin film spectroscopic tools. Especially with refined Micro Raman spectroscopy for which some experimentally confirmed revised quantum mechanical fundamentals have to be used. This gives new important perspectives for selective design of equipment's upon considered application. Especially, concerning modified doped graphenic materials with controlled defects and voids content, and for upscaled, stress reduced, harder, adhesive antireflecting, antisoiling high gap ta-C nano films. Last ones, could generally not be correctly used in practice up to now when not being correctly characterized and when not knowing how their original high stress can be annealed without graphitic degrading. All this allows much cheaper more stable and improved solutions for photovoltaic and photocatalytic devices and storage, air and body transportation, nanotechnologies, nuclear components, new anticorrosive tribological and antiwear applications.

Key words: Revised solid-state fundamentals. Controlled phase transitions and material degradation. Stress and adhesion management. Breakthrouhing carbon ta-C coating and graphenic material and equipment engineering. Achievement and mastering of requested superior specific combined properties

Biography:

Stephane NEUVILLE obtained a degree in physics at Grenoble Polytechnic Institute with Louis Neel in 1970. In 1996 he obtained a PhD at Ecole Polytechnique (X) in Palaiseau France on plasma and thin film technologies. Between 1971 and 2005, with different companies involved with thin films, plasma technology, and analytical instruments, he closely associated R&D to export and general management with outstanding results.

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