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Characterization of films, coatings and nanocomposite materials by nanoindentation

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Results of the application of the nanoindentation technique for the characterization of the mechanical properties of different materials will be presented and analysed. Three different systems are investigated: i. a hard homogeneous film on a homogeneous substrate, i.e., diamond-like carbon films modified by titanium and/or silicon deposited on Ti substrates; ii. a hard homogeneous film on a inhomogeneous substrate, i. e., pure DLC coatings on aluminum-silicon alloy substrates; iii. an inhomogeneous bulk material, i. e., polymer matrix composites with ceramic filler particles.