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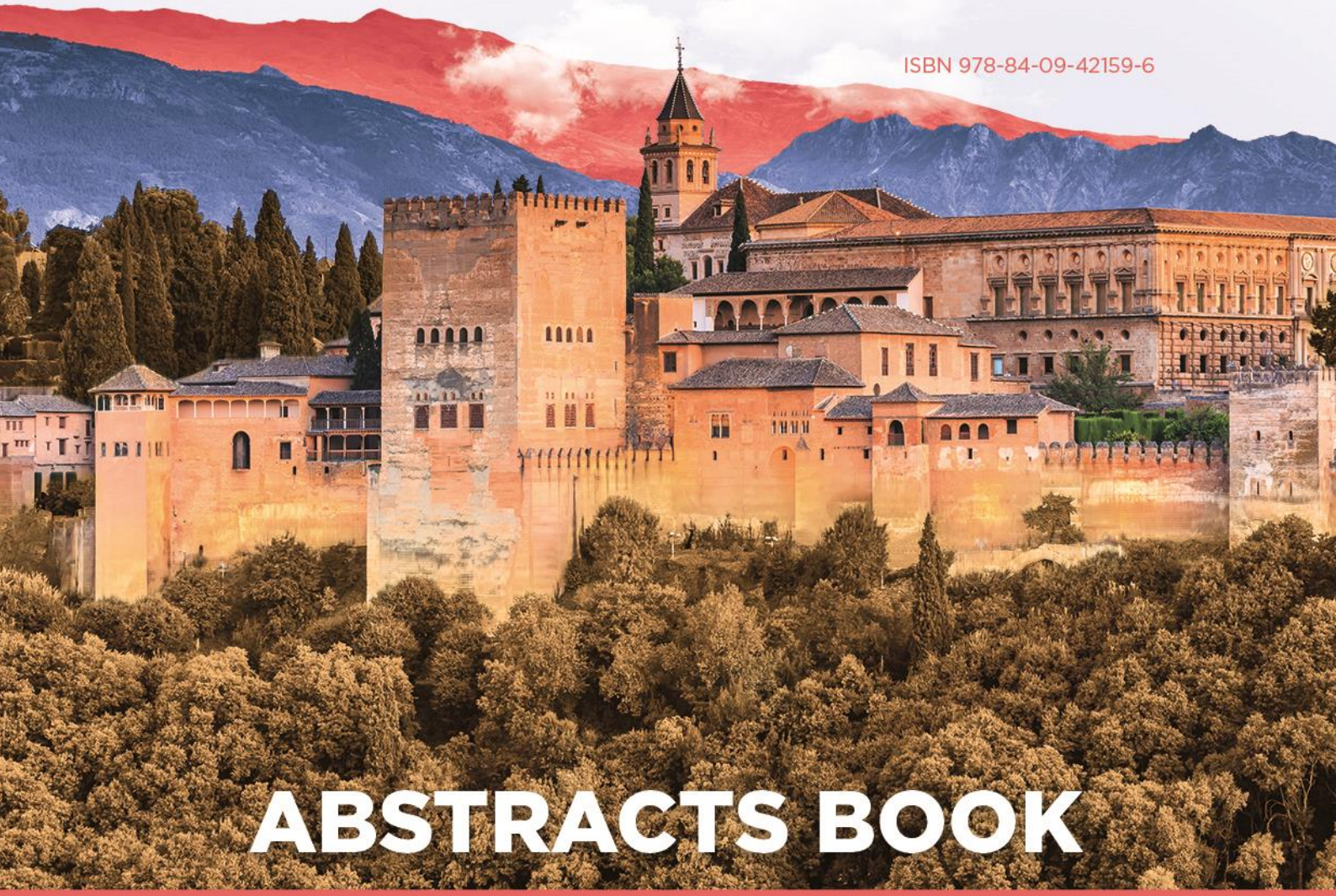

ABSTRACTS BOOK

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DESIGN OF ANISOTROPIC PLASMONIC NANOSTRUCUTRES FOR LIGHT-TO-ENERGY CONVERSION APPLICATIONS

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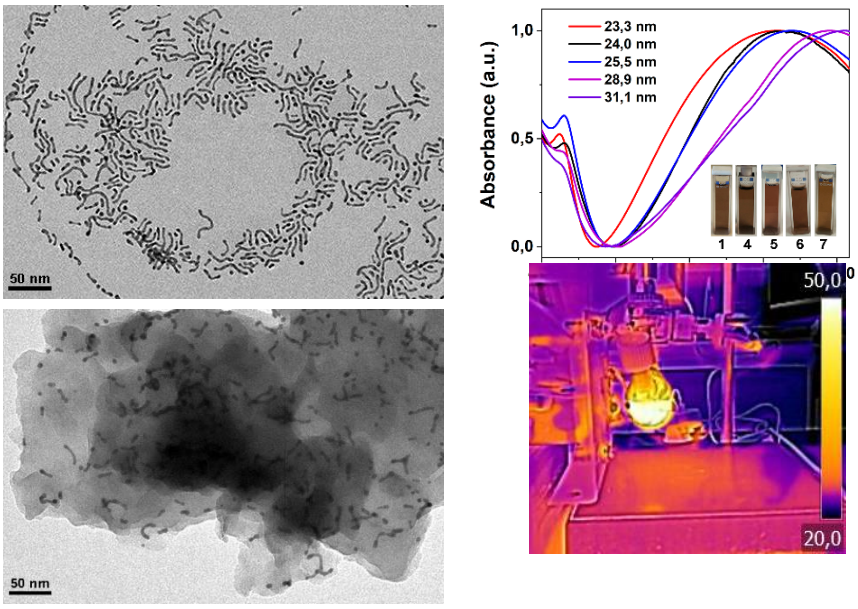
The thorough control over the synthetic conditions for the preparation of metallic nanoparticles is essential to achieve the tuning of the shape, size and composition. These characteristics are intimately related to their optical, catalytic and biological properties. A straight methodology consists of the mild reduction of organometallic complexes in the presence of stabilising ligands, which also act as growth directing agents, favouring the anisotropic growth of new nanostructures. [1,2]

Thus, a heterometallic gold(I)-silver(I) precursor, $[Au_2Ag_2(C_6F_5)_4(Et_2O)_2]_n$, in the presence of oleic acid (OA) leads to the formation of bimetallic wavy nanorods of controlled dimensions. These new nanostructures have a strong plasmonic absorption in the NIR region, arising from the longitudinal surface plasmon resonance mode, around 1500 nm. This plasmonic absorption can be tuned by controlling the nanorod length, which is modified by changing the stoichiometric ratio between the precursor and the OA growth directing agent. The obtained nanostructures have a potential interest for their use in different photocatalytic and biological applications (see Figure).

On the other hand, these nanostructures have been functionalized with PEG-SH polymer or grafted on different substrates, such as the 2D semiconductor carbon nitride (C_3N_4) or an insulator, like silica nanoparticles. The biocompatible functionalization provides the possible application of these nanostructures in photothermal therapy, whereas the deposition on active surfaces permits their use in photocatalytic reduction reactions as well as on light-to-thermal energy applications (see Figure).



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