

# Nanocomposites and nanomaterials

## Growth features of Pt nanoparticles at the stage of ostwald ripening

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Advances in technologies, especially in nanotechnologies, cause significant interest towards Ostwald ripening (OR). It is well known that the nanoscaled particles (1–100 nm) can reveal new properties different from characteristics of the bulky substances and the potential market of the nanoapplications in different branches of science and technology such as electronics, optoelectronics, information technology, medicine, and pharmacology is very wide [1].

An analysis of the experimental data related to the mechanism of Pt particles sintering has been carried out using the modified LSW theory. The size distribution for the Pt nanoparticles at the stage of Ostwald ripening fits the generalized Lifshitz-Slyozov-Wagner model calculated with the assumption of two parallel mechanisms involved in the nanoparticles growth (dissolution): diffusion and Wagner's (controlled by the chemical reaction rate). Comparison between the experimental histograms and the curves calculated theoretically proves the governing role of the Wagner's mechanism (chemical reaction) in the Pt nanoparticles growth.

[1] U. Hartmann, *Faszination Nanotechnologie*, Vol. 8, Elsevier, Spektrum Akademischer, Munich, Germany, 2006.