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Marangoni convection in binary and nano-fluids ALLA PODOLNY, ALEX NEPOMNYASHCHY, Technion, Math Department, ALEX ORON, Technion, Mechanical Engineering Department — Investigation of the Marangoni convection in binary fluids in the framework of a linear stability theory was started several decades ago. Recently, a new class of fluids, nanofluids, has been successfully applied in heat transfer devices. From the point of view of dynamics and heat/mass transfer, a typical nanofluid behaves as a Newtonian binary fluid with an extremely small Lewis number and anomalously high Soret coefficient. While there is a significant number of publications on the buoyancy convection in nanofluids, including binary nanofluids, the Marangoni convection in nanofluids is still hardly investigated, though an essential influence of nanoparticles on surface tension has been revealed in some experiments. The latter phenomenon can be significant for applications of nanofluids in boiling devices, including those used under microgravity conditions. The present talk describes a unified theoretical description of Marangoni convection, which can be applied for both binary solutions and nanofluids.

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