Spheres settling in an Oldroyd-B fluid[1] TSORNG-WHAY PAN,
ROLAND GLOWINSKI, Dept of Mathematics, Univ of Houston — In this talk
we present a numerical study of the dynamics of balls settling in a vertical channel
with a square cross-section filled with an Oldroyd-B fluid. For the case of two balls,
two typical kinds of particle dynamics are obtained: (i) periodic interaction between
two balls and (ii) the formation of a vertical chain of two balls. For the periodic
interaction of two balls occurred at lower values of the elasticity number, two balls
draft, kiss and break away periodically and the chain is not formed due to not strong
enough elastic force. For slightly higher values of the elasticity number, two balls
draft, kiss and break away a couple times first and then form a chain. Such chain
finally becomes a vertical one after the oscillation damps out. For higher values
of the elasticity number, two balls draft, kiss and form a vertical chain right away.
The formation of three ball chain can be obtained at higher values of the elasticity
number.

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