実事象融合計算研究分野(石本 淳)

次世代反応性混相流動　H24年度の研究成果：マイクロ・ナノ固体窒素噴霧を用いた環境調和型ナノデバイスクリーニングに関する研究

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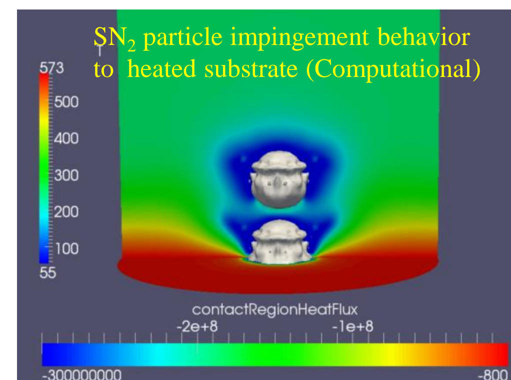
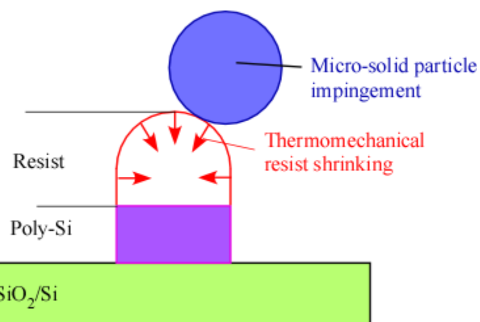
Jun Ishimoto, Daisuke Tan, U. Oh, Tomihiro Kubota, and Seiji Samukawa,
Integrated Experimental and Numerical Study, of Thermomechanical Resist Removal-Cleaning Performance Using Cryogenic Micro-Solid Nitrogen Spray, *ECS Transactions*, Vol. 41, No.5, pp. 83-90 (2011).
International collaboration: Hanyang Univ., Korea (Prof. Jin-Goo Park, NEMPL),
Northeastern Univ. (Prof. Ahmed A. Busnaina, NSEC)

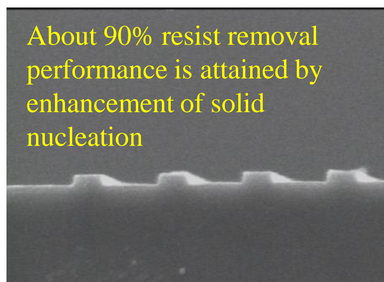
Objectives:

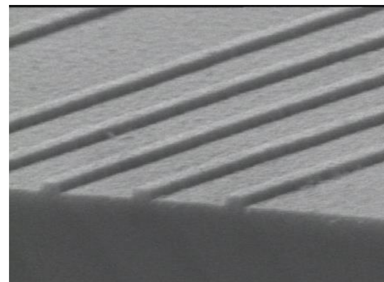
- To develop wafer resist removal and cleaning technology using micro-nano solid nitrogen spray (SN_2) which becomes applicable to the special device whose plasma damage becomes serious problem, and applicable to the device that the reactivity of the O_2 radical is high such as CCD or photovoltaic passive device.
- New physical wafer resist removal and cleaning technology which is not required O_2 plasma or UV ashing. Chemical free, damage-less cleaning system should be developed.



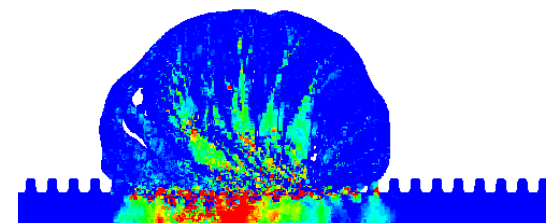


Thermomechanical effect of resist contraction by SN_2 particle impingement





90% resist removal performance has been achieved by micro-nano SN_2 spray cleaning without use of plasma ashing



Stress profile while SN_2 particle impingement to resist (Computational)

The magnitude of pressure in SN_2 particle and wafer resist increases with SN_2 impingement and fragmentation.

異分野融合研究により環境調和型・低エミッション(無駄の少ない)エネルギー循環システムへの貢献を目指す