

Abstract Submitted  
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**Many body effects on energy dissipations accompanying charge transport through single molecular bridge junction** YOSHIHIRO ASAI, RICS-AIST — Local heating due to inelastic electron-phonon (e-ph) scatterings accompanying charge transport through single molecular bridge junction [1-3] has been theoretically discussed. [4] Here, in this talk, electron-electron collision effect on the local heating, energy dissipation and thermoelectric energy conversion will be discussed. Because the Hartree-Fock electron-electron self-energy is energy independent and it covers most of electron-electron interaction energy, the collision is mostly elastic. Inelastic contribution from electron-electron collision is limited beyond Hartree-Fock (HF) approximation. Electron correlation effect (beyond HF approximation) on the local heating and energy dissipation will be discussed using the screened Coulomb RPA (GW) approximation and beyond. Some electromagnetic problems will be addressed.

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- [4] Y. Asai, Phys. Rev. B78, 045434 (2008) and in preparation.

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