

Ordered phase of electron systems

-Structure and Electronic States of Molecular Systems-

H. Fukuyama

Reizo Kato: “Effects of strong correlations in molecular conductors”

Hiroshi Sawa: Detailed structure analysis

Shinya Koshihara: Dynamical processes in the photo-induced phase transition

Masaki Takata: Imaging by MEM charge density analysis

“ **Materials Science based on the understanding of *local structure* and associated *electronic states (spectroscopy)* ”**

① **Strongly correlated electrons: Oxides**

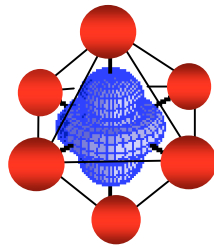
② **Interfaces and surfaces: TMR, “Contact Problems”**

③ **Molecular assemblies: single component metals,
phthalocyanine, myoglobin, Fe-S cluster.**

Cores of “ Nano-science” leading to “ Nano-technology”

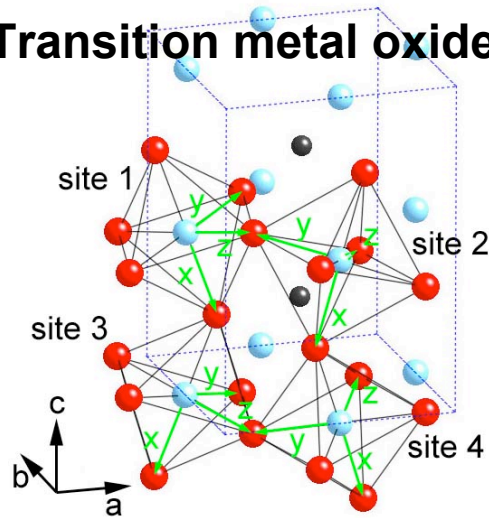
“local structure ”- atomic or molecular spatial arrangement in micro scale and “local electronic states (spectroscopy) “ => properties of bulk materials

perovskites



Oxygen

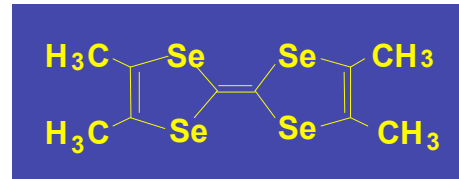
Transition metal oxides



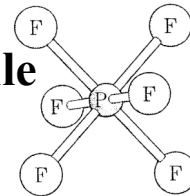
High T_c: Cuprates
CMR: Manganites

“Strongly correlated electrons”

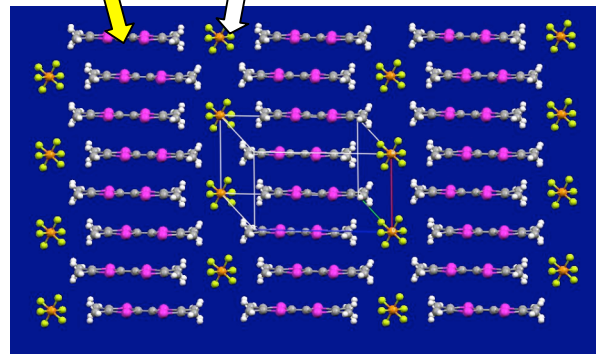
TMTSFmolecule



PF₆ molecule



TMTSF PF₆⁻

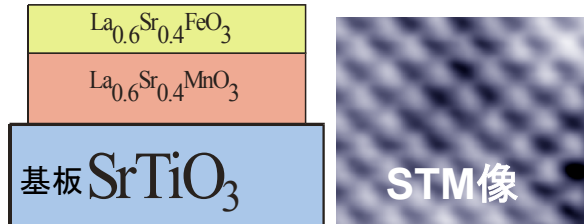


TMTSF₂X

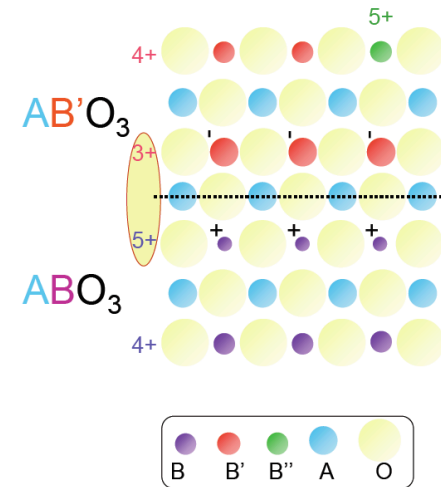
Superconductivity
Mott insulators
Charge ordering
Flexibility and diversity

Molecular solids

“Molecular assemblies”



Interfaces of oxides



Catalysis
Devices

“Interfaces and surfaces”