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Integration of VO₂ with Si (100)

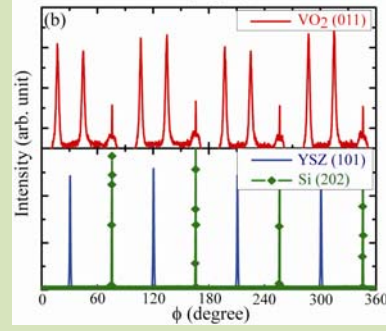
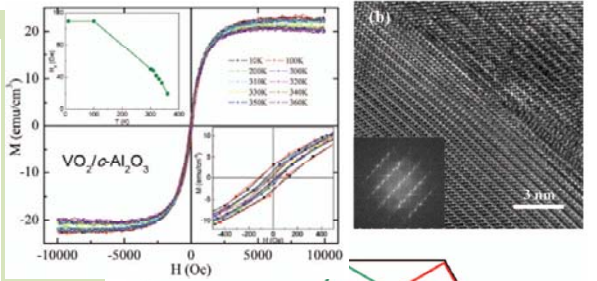
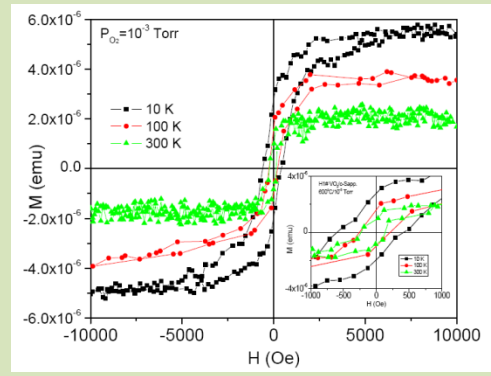
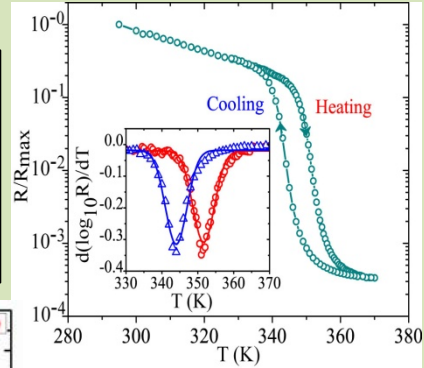
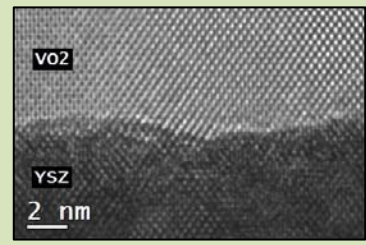
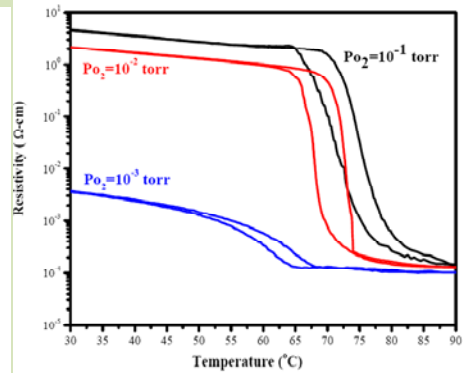
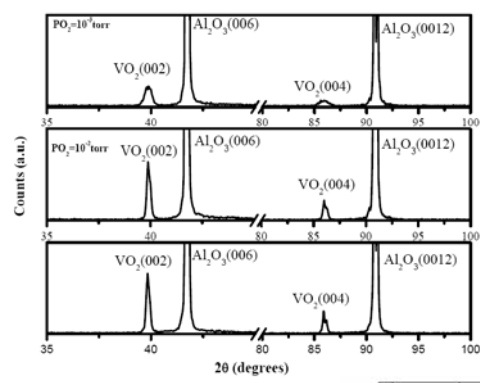
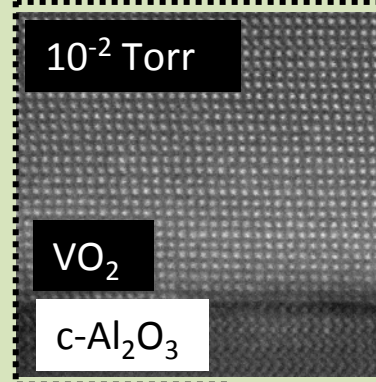
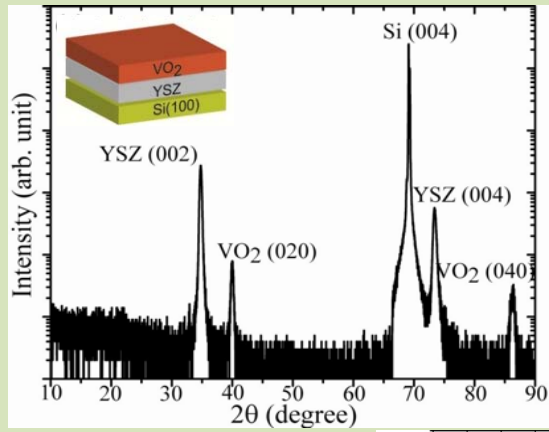
Motivation

- It has been a major challenge to integrate epitaxial VO₂ films on Silicon (100) to enable smart sensor technology.

Magnetism in VO₂ and Pressure Effects

Motivation

- Investigate the role of oxygen vacancies on the SMT characteristics and ferromagnetism of VO₂.



Conclusions

- Epitaxial integration of VO₂ thin films with Si (100) using tetragonal/cubic YSZ as intermediate layer.
- All layers grow via domain matching epitaxy.

Conclusions

- Ferromagnetism in VO₂ thin films with a saturation magnetization of ~18 emu/cm³ and coercivity of 40 Oe.
- New functionality (magnetic property) and integration with electrical and optical properties of VO₂.

