國文中國大學機械系 戴慶良教授 △ Micro Electro Mechanical 1nm 1mm Molecules Virus Chip Water Cells Hair Transistor (~1,Um) (~10,Um) (~100,Um) (~1nm) (~10nm)  $(\sim 1 cm)$ (10cm) △UEUS三大製程加工方法 ⇒ Surface Micromachining (表面微加工): deposition, lithography, etching + sacrificial release 1 + 1 + UV radiation bare S- water deposit photoresist mask and expose photoresist deposit thin film(s) process develop photoresist strip photovesist 結構層 etch fim Sacrifical release Made with Goodnotes

2025.09.30 〈奈微機電系統技術及應用〉

△ Micro mechanical RF Switch (機械式射頻開開) Micro tunable resonator (可調式其振器) Power handling Switch Type Insertion loss Isolation Cost Good PIN diodes Good Poor Good Good GaAs FETs Good Poor MEMS Excellent Excellent Good Excellent Excellent (0.1~0.6dB) (-40~-50dB) Switches & Applications of RF MEMS Switch Antenna Transmitter Switch ≥ Electrostatic - type MEMS switches Metal contacting (金屬接觸形式)
Capacitive coupling (零容耦合性) Afteromechanical resonator

[1. High performance transducer microphone 2. Cost low 3. Easy integrate with light, electricity, heat and magnet on a chip 4. Good stability at temperature and ageing Applituation of Magnet Scommunication system