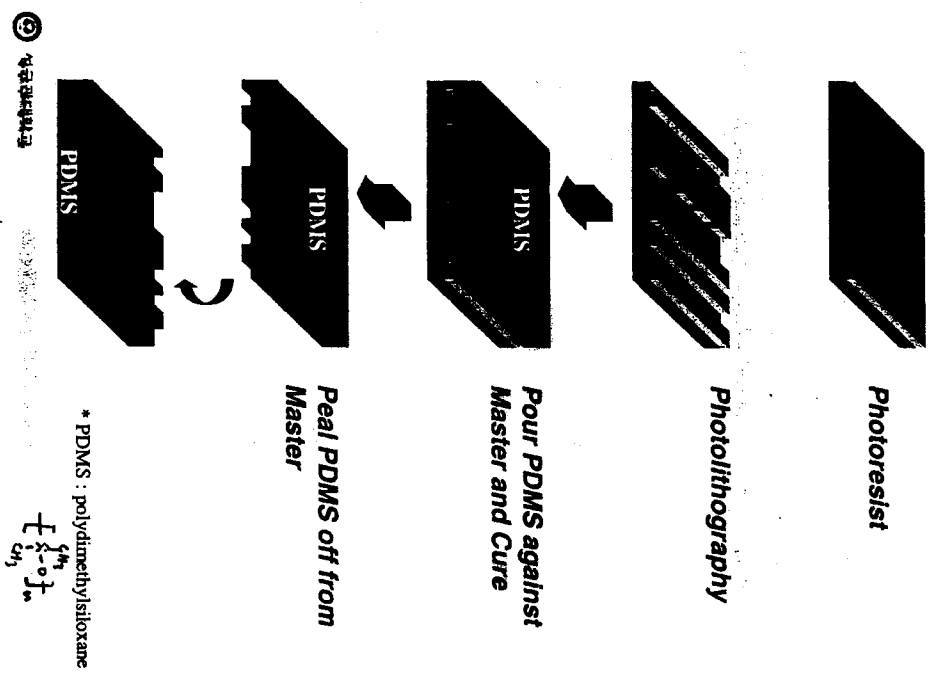
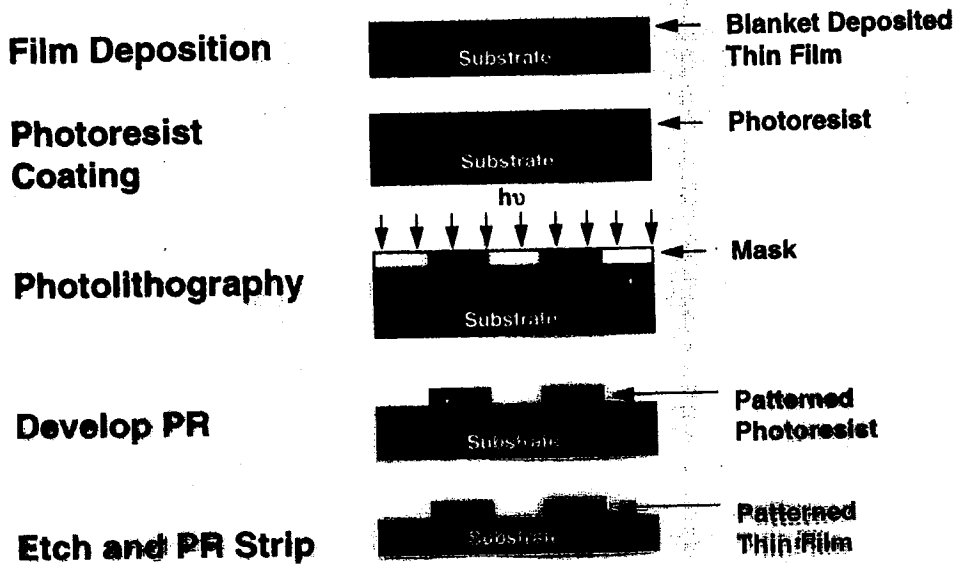
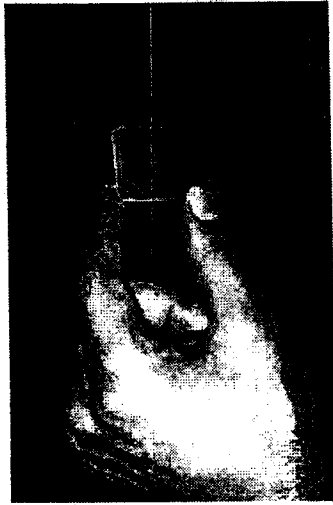


Alternative Patterning of Thin Films



Preparation of Microcontact Printing Stamp



PDMS도장으로 슬라이드 글라스에 잉크를 찍음.

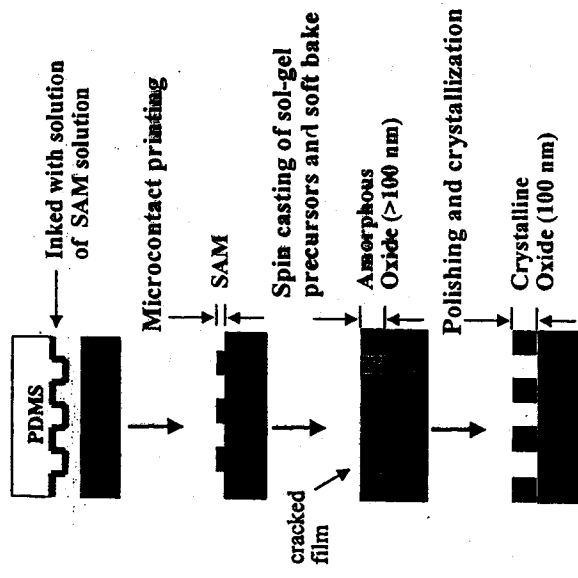
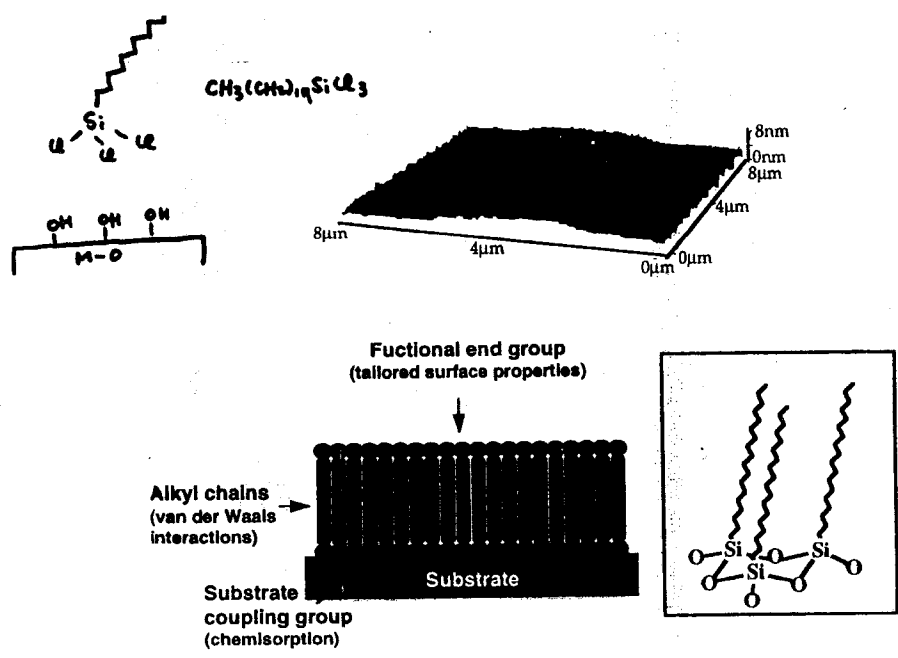


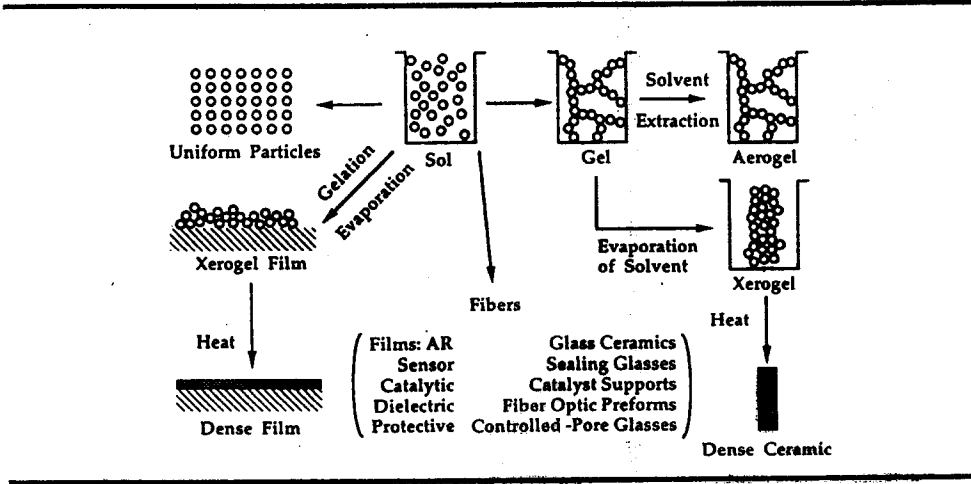
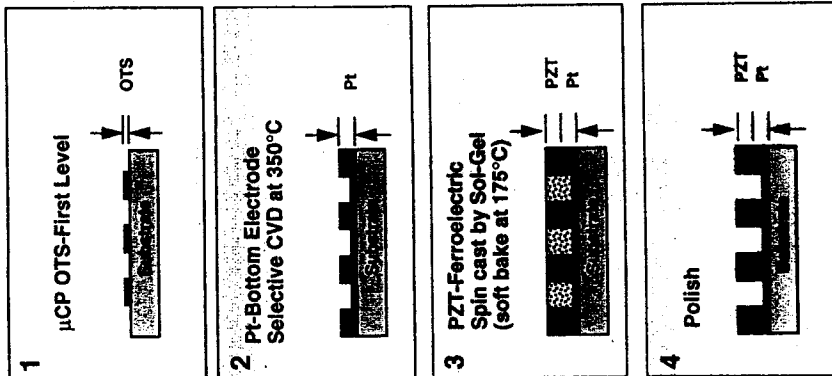
그림2 선택적 박막형상화

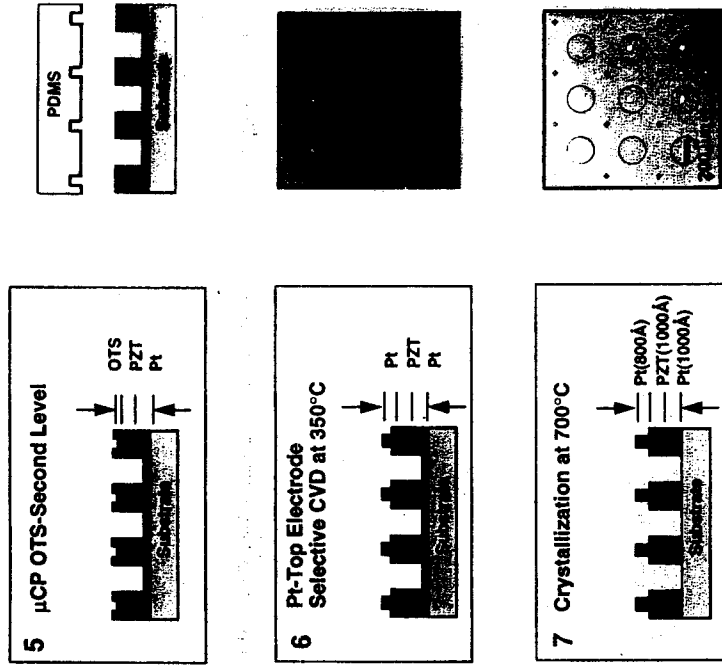
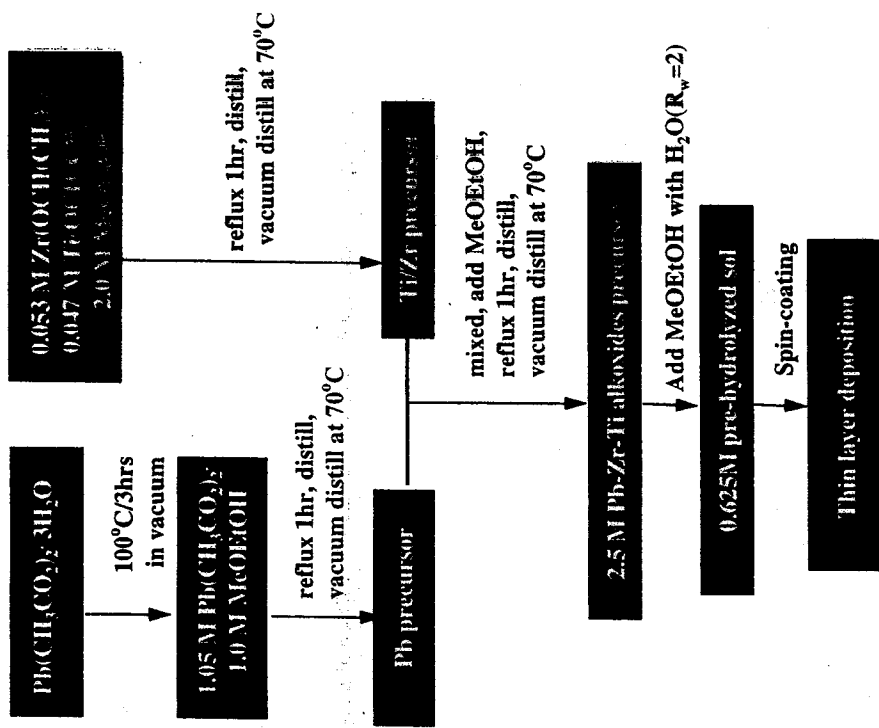


Various thin films

1. Metal - Cu, Pt, Pd (CVD)
2. Dielectric - TiO_2 (CVD), Ta_2O_5 (sol-gel)
3. Ferroelectric - $\text{Pb}(\text{Zr},\text{Ti})\text{O}_3$, PbTiO_3 (sol-gel)
4. Ferromagnetic - LaMnO_3 (sol-gel)
5. Semiconductor - CdS (Chemical Solution Deposition)

Capacitor Fabrication Steps

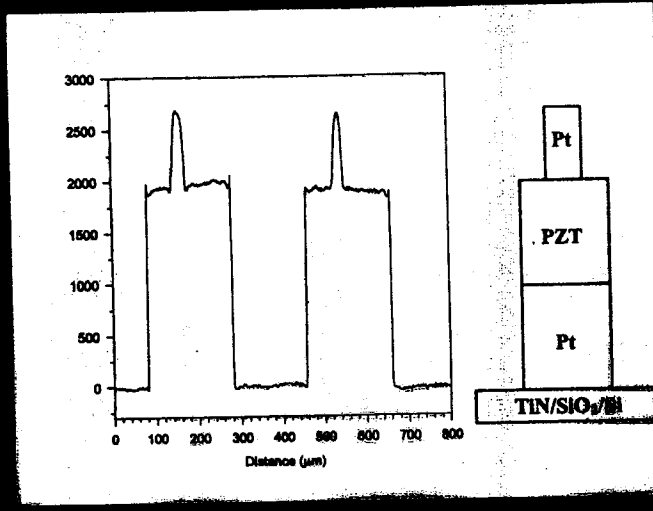




Experimental procedure for preparation of $\text{Pb}(\text{Zr}, \text{Ti})\text{O}_3$ thin-film using alkoxide solution

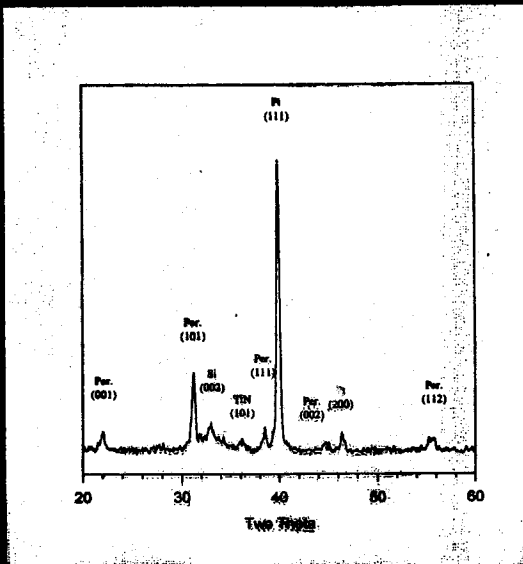
Surface Profile

Capacitor



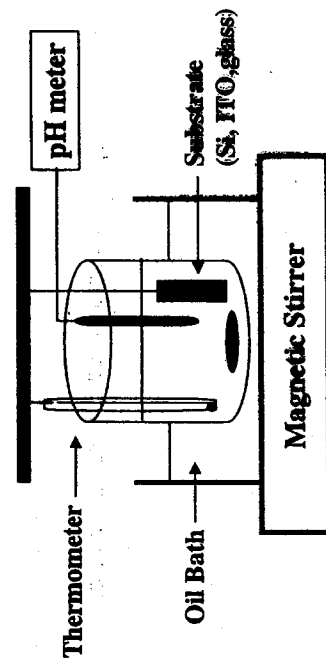
Crystallographic

Structure



Experiment

Chemical Solution Deposition(CSD)



Reaction Condition

1. Cleaning Si(100) substrate.
2. Preparation of $\text{Cd}(\text{CH}_3\text{COO})_2 \cdot 2\text{H}_2\text{O}$, $5 \cdot 10^{-3}$ M.
3. Addition of $\text{H}_2\text{NCH}_2\text{CH}_2\text{NH}_2$ (en), $1.5 \cdot 10^{-2}$ M.
4. Pouring of H_2NCSNH_2 , $5 \cdot 10^{-3}$ M
at the $50-55^\circ\text{C}$ with pH 10.6 ± 0.2 .
5. Stirring of mixed solution for 10 - 60 min.

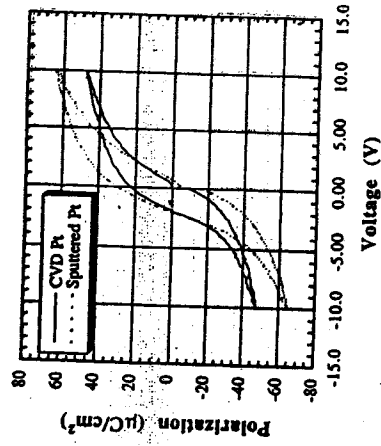
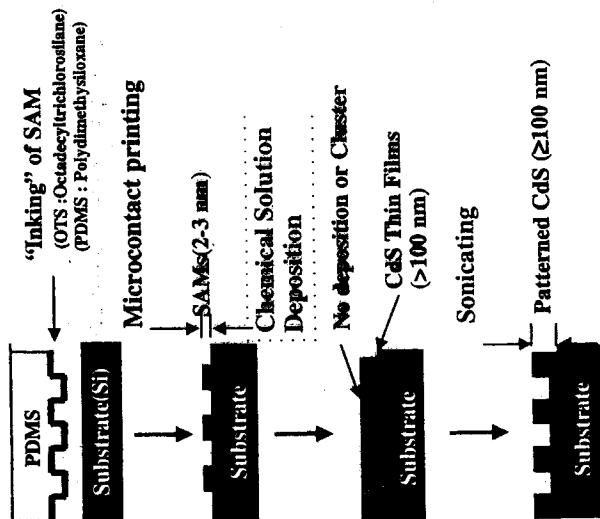
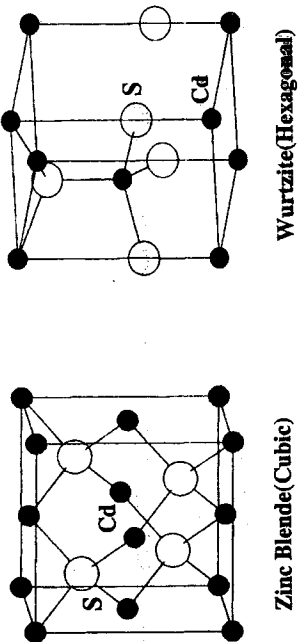


Fig. 4. Polarization hysteresis loops for Pt/PZT/Pt stacked capacitors on a Ti/Si substrate using either CVD (solid line) or sputtered (dashed line) Pt electrodes. The zero-field remnant polarization for both samples is characteristic of a ferroelectric capacitor, though less ideal on the CVD-derived Pt. Remnant and saturation polarization values of $P_r = 10 \mu\text{C}/\text{cm}^2$ and $P_s = 31 \mu\text{C}/\text{cm}^2$ were obtained for the CVD Pt metallization, as compared to $P_r = 20 \mu\text{C}/\text{cm}^2$ and $P_s = 38 \mu\text{C}/\text{cm}^2$ for sputtered Pt electrodes.

Patterning of CdS Thin Films

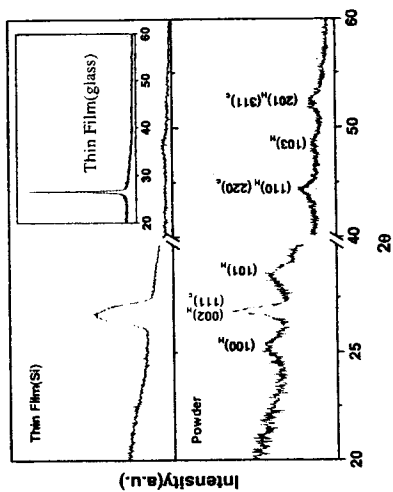


Structure of CdS

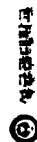


Zinc Blende(Cubic)

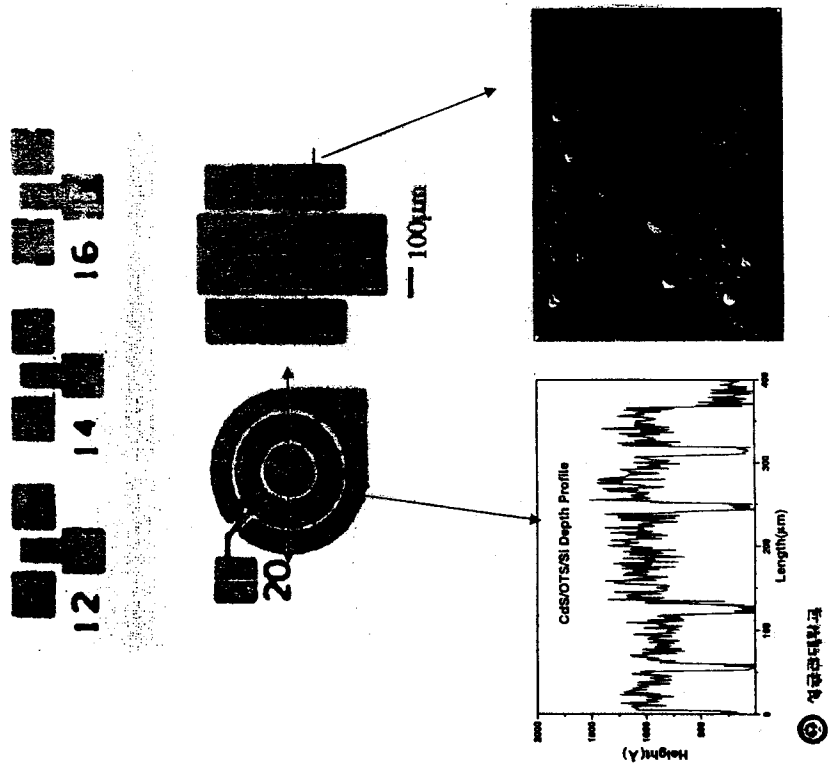
Wurtzite(Hexagonal)



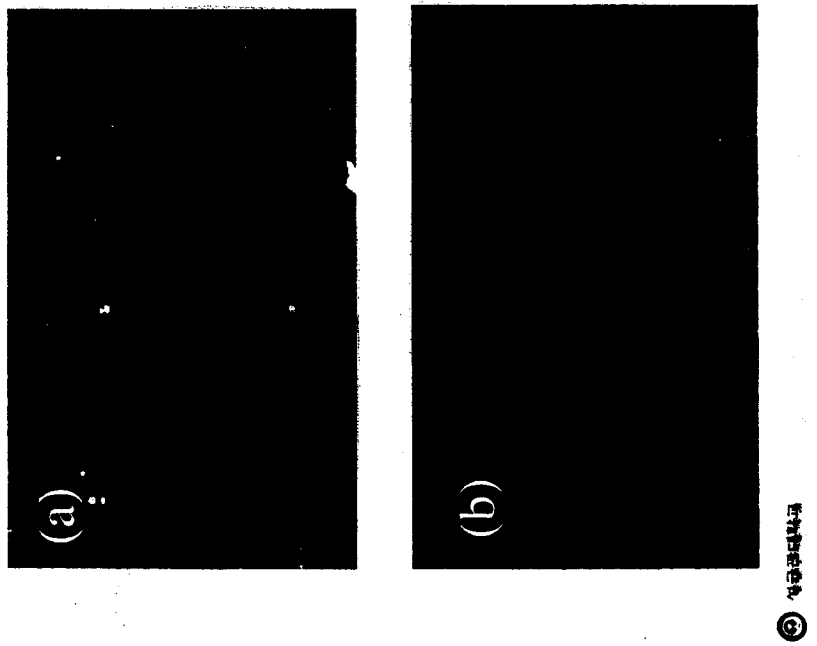
XRD of the CdS Thin Films after Heat Treatment



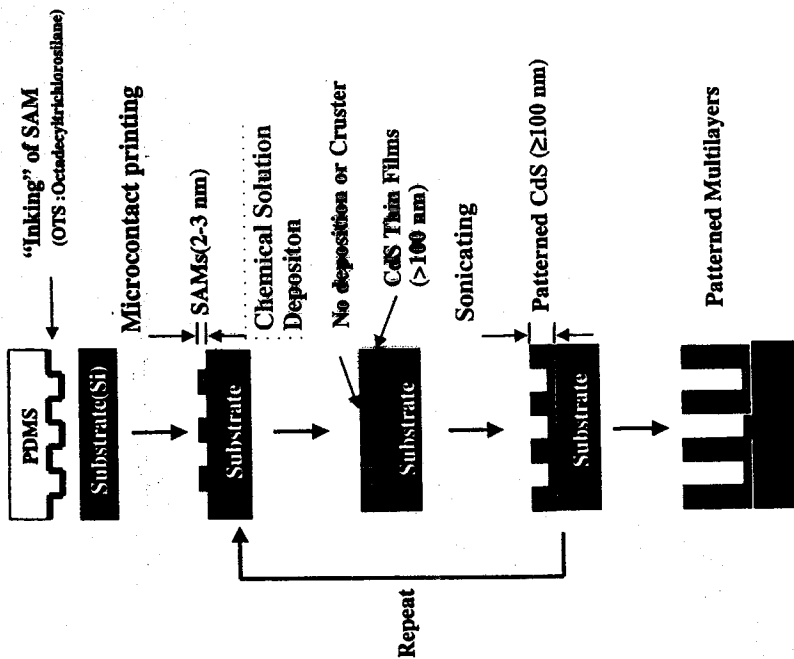
Selective Deposition of CdS Thin Films on the Si-Substrate



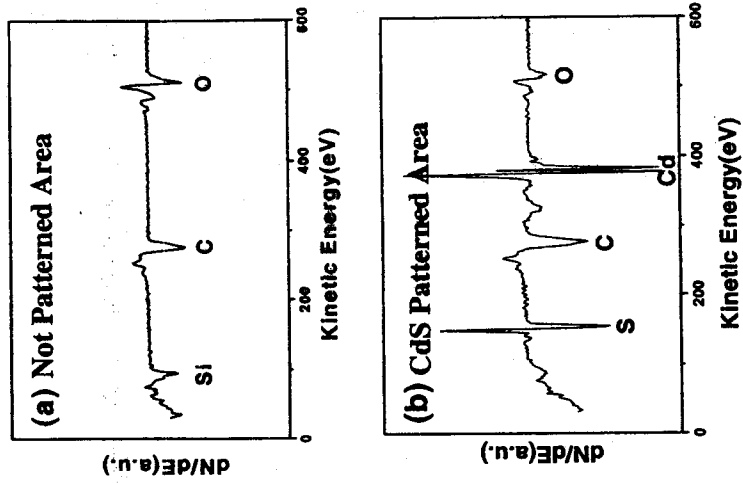
Selective Deposition of CdS Thin Films on the Si Substrate



Construction of the Multi-layers



Auger Electron Spectroscopy



Conclusion

1. 자기조립 단분자 막을 사용하여 표면의 특성을 조절
2. 졸-겔, 화학 용액 증착, 화학기상 증착 적용
3. 조건에 따른 다양한 선택적 증착
4. 손쉬운 박막의 패터닝

