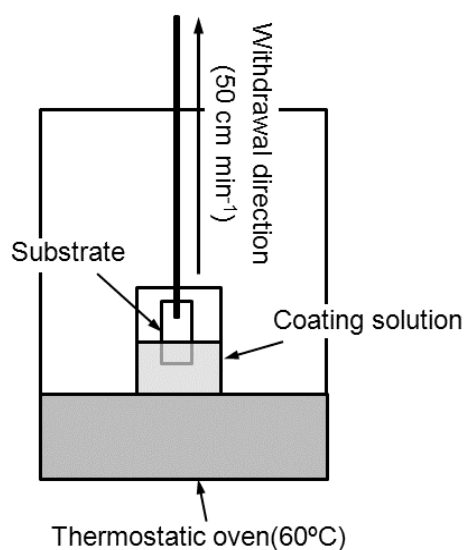


# Spontaneous pattern formation induced by Bénard-Marangoni convection for sol-gel-derived titania dip-coating films: Effect of cosolvents with high surface tension and low volatility

Hiroaki Uchiyama\*, Tadayuki Matsui, Hiromitsu Kozuka

Department of Chemistry and Materials Engineering, Kansai University, 3-3-35 Yamate-cho, Suita, 564-8680, Japan

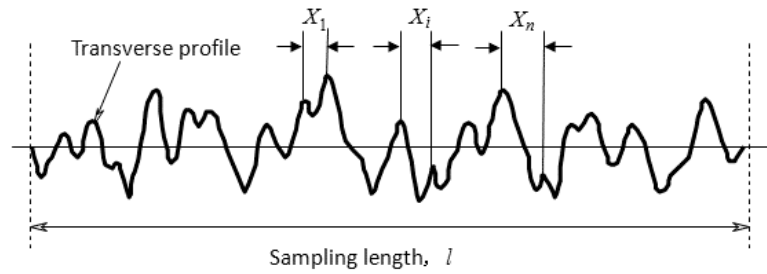
E-mail: [h\\_uchi@kansai-u.ac.jp](mailto:h_uchi@kansai-u.ac.jp) (H. Uchiyama)



Supporting Information Figure S1. Schematic illustration of temperature-controlled dip-coating.

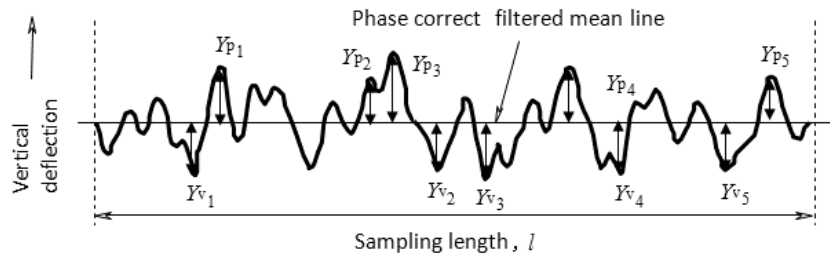
Mean spacing of local peaks,  $S$

$$S = \frac{1}{n} \sum_{i=1}^n X_i$$

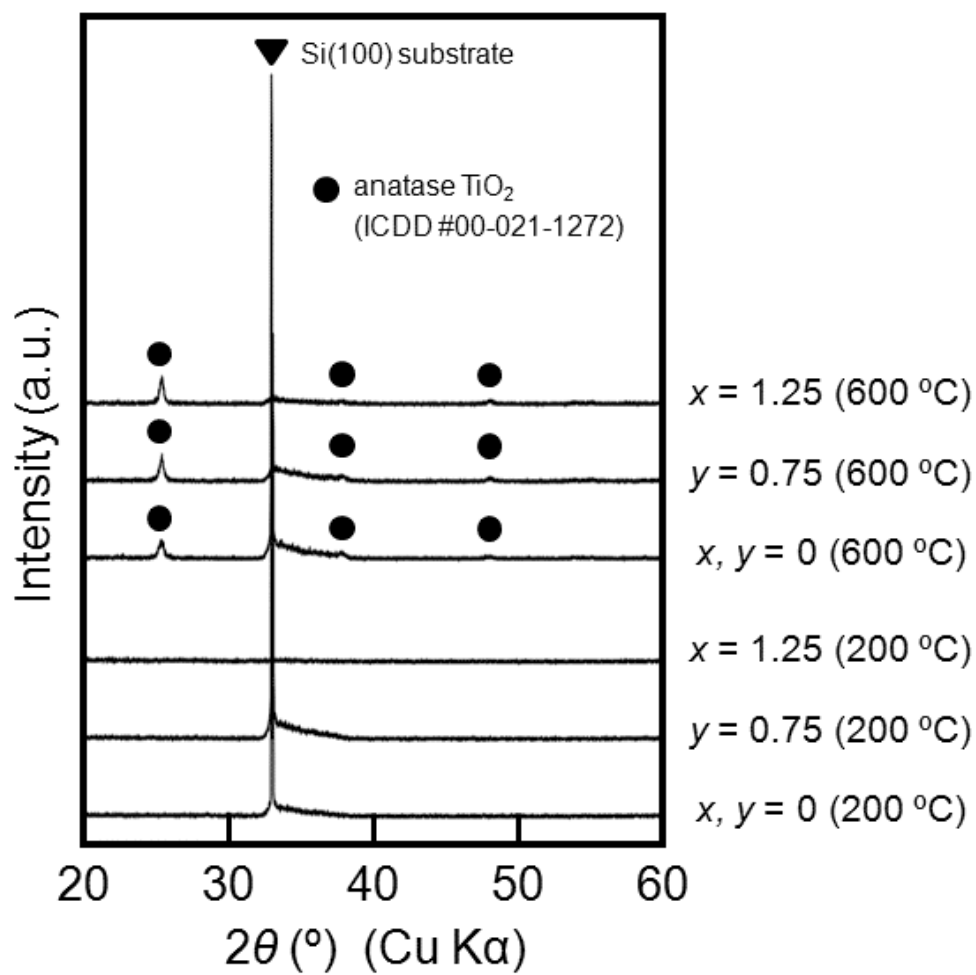


Ten point height of irregularities,  $R_z$

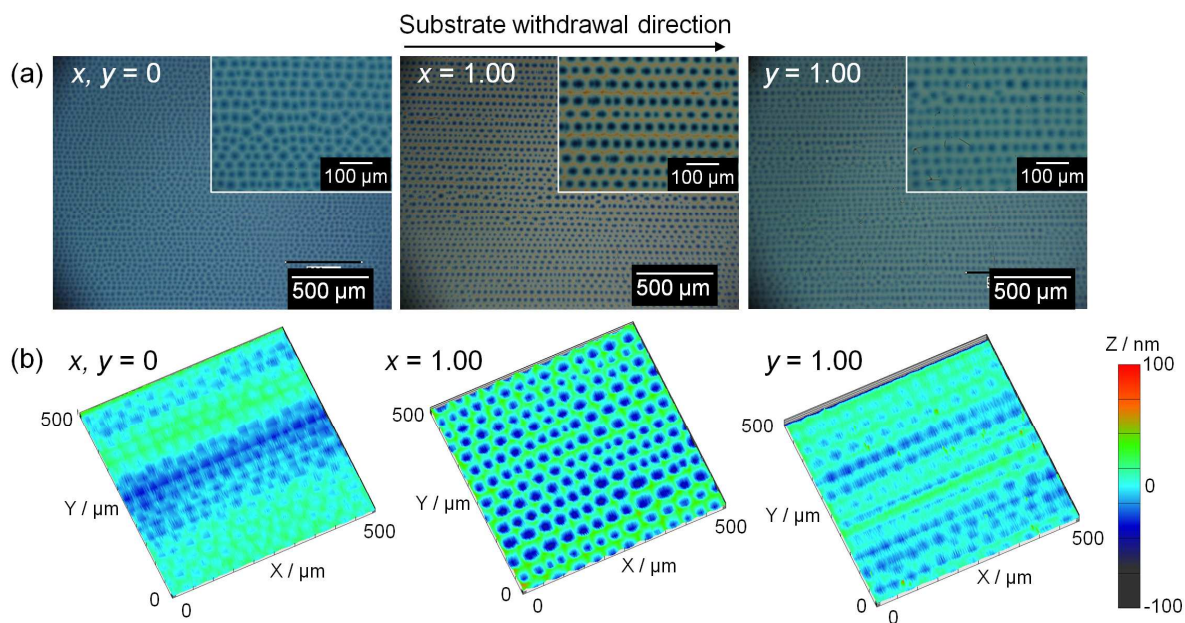
$$R_z = \frac{1}{5} \sum_{i=1}^5 (|Y_{p_i}| + |Y_{v_i}|)$$



Supporting Information Figure S2. Definition of surface roughness parameters,  $S$  (mean spacing of local peaks of the profile) and  $R_z$  (10 point height of irregularities).



Supporting Information Figure S3. XRD patterns of the titania films heated at 200 and 600 °C.



Supporting Information Figure S4. Optical micrographs (a) and 3D surface profiles (b) of the titania films obtained without cosolvents ( $x$  and  $y = 0$ ), and with PG ( $x = 1.00$ ) and DPG ( $y = 1.00$ ) (heated at 600 °C).