# Supplementary Information
Structural color printing with dielectric layer coated on nanotextured metal substrate: simulation and experiment

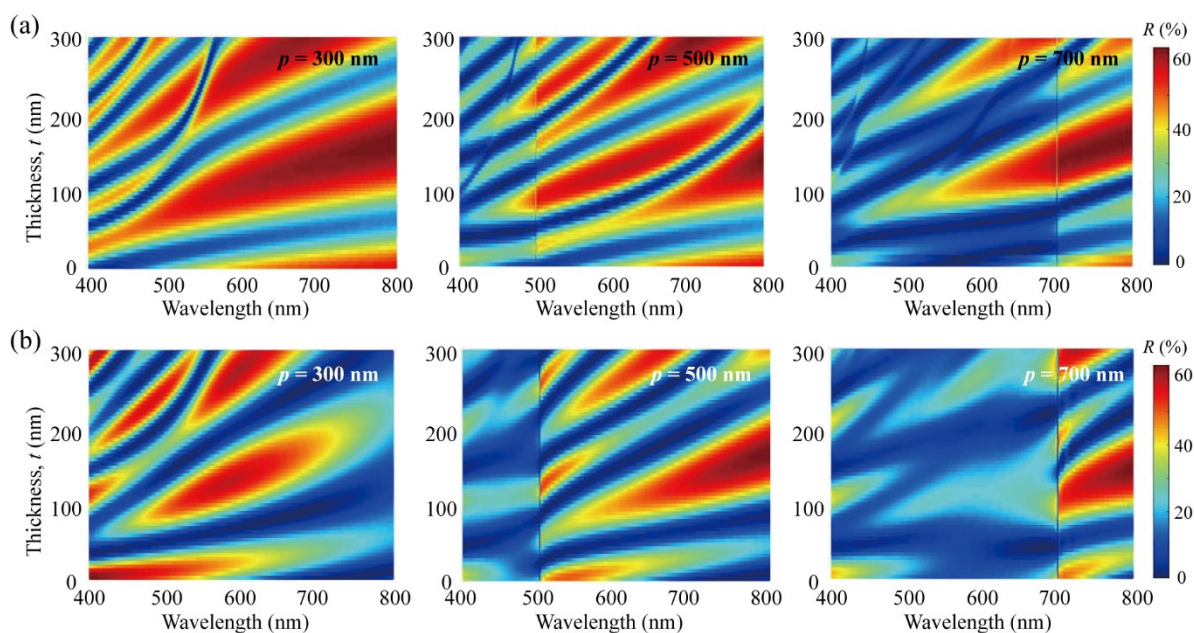Minseok Seo,[a] Heungyeol Lee,[b] Hohyeong Kim,[b] and Myeongkyu Lee*[a]

[a]Department of Materials Science and Engineering, Yonsei University, Seoul 120-749, Korea
[b]Korea Institute of Industrial Technology, Incheon 21999, Korea
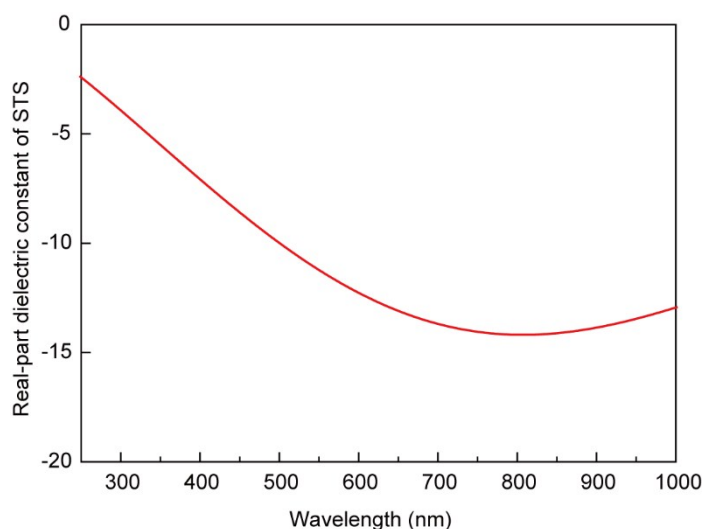
**Figure S1**. Real-part dielectric constant of STS

Figure S2. (a) Reflectance (*R*) of TE-polarized light with respect to the thickness of the dielectric layer and the wavelength of the light at three different grating periods: *p* = 300, 500, and 700 nm. (b) Reflectance of TM-polarized light. The refractive index of the dielectric layer is *n* = 2.0.
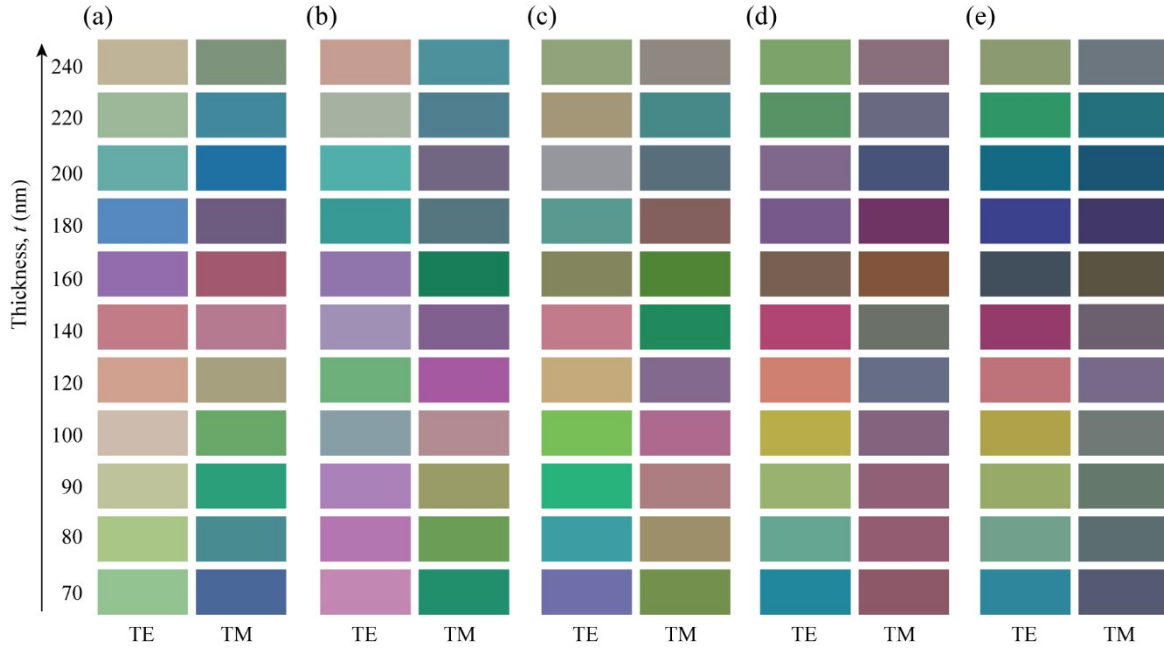

Figure S3. Colors with respect to the thickness of the dielectric layer for (a) *p* = 300 nm, (b) *p* = 400 nm, (c) *p* = 500 nm, (d) *p* = 600 nm, and (e) *p* = 700 nm. The refractive index of the dielectric layer is *n* = 2.0.
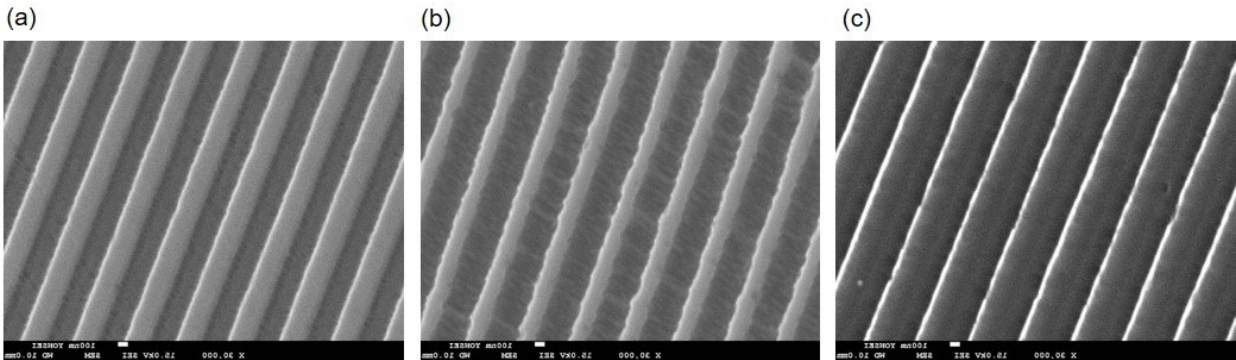

Figure S4. SEM images of line patterns formed on the surface of STS. The duty cycle and grating height are (a) 0.5 and ~60 nm, (b) 0.36 and ~150 nm, and (c) 0.12 and ~175 nm. All have the same period of 500 nm.

No Si₃N₄ layer — With a 100 nm Si₃N₄ layer — With a 200 nm Si₃N₄ layer
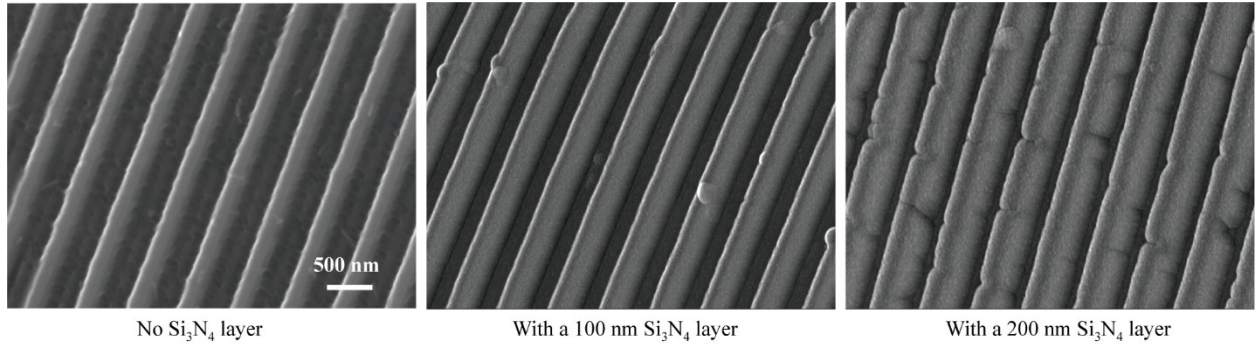
Figure S5. SEM images of the textured STS surface before and after the deposition of the Si_3N_4 layer.
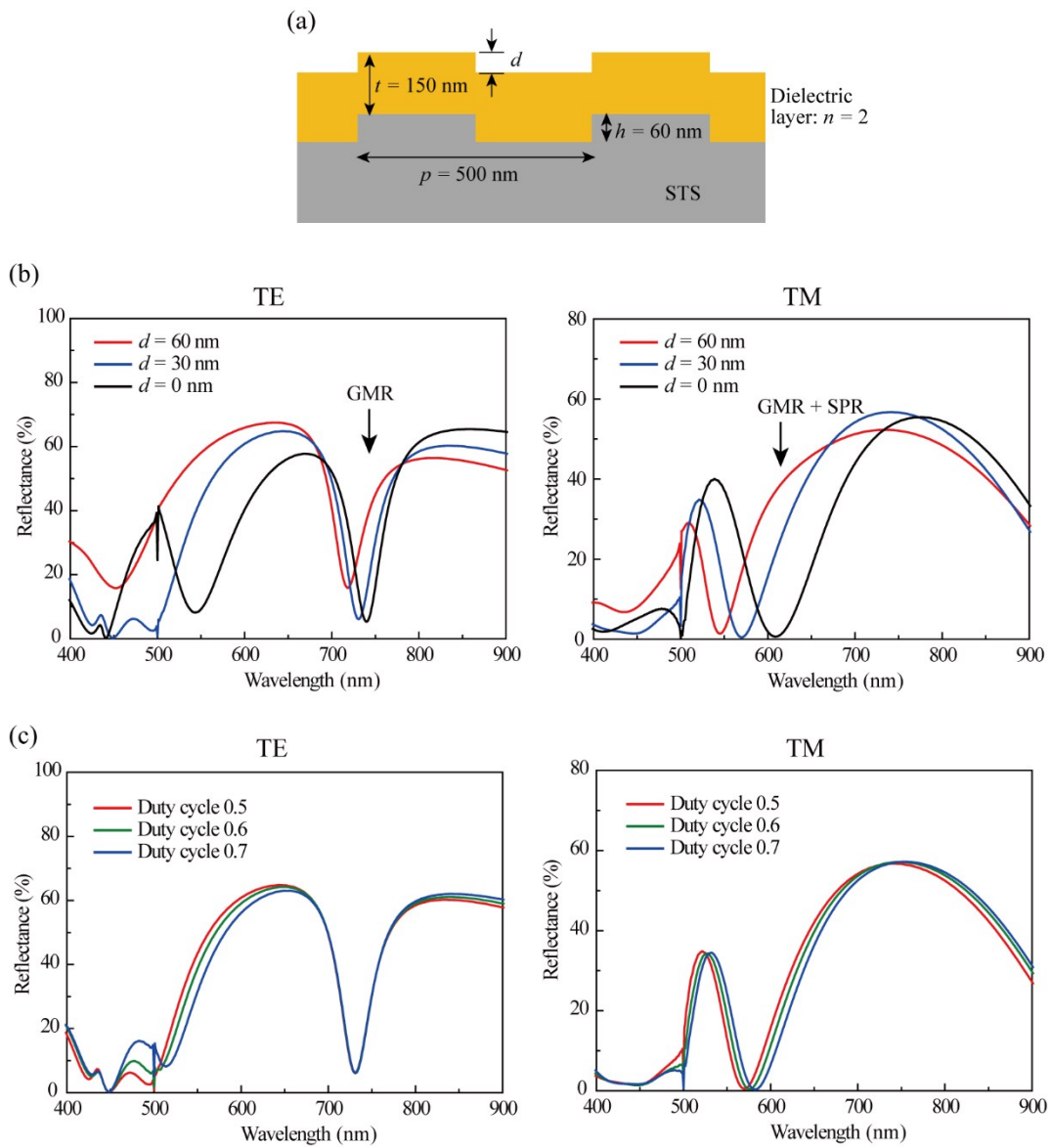
Figure S6. (a) Simulation structure for investigating the effect of the surface morphology of the dielectric layer. (b) Reflection spectra versus the groove depth "*d*", where the duty cycle of the surface texture is 0.5. (c) Reflection spectra versus the duty cycle at *d* = 30 nm.
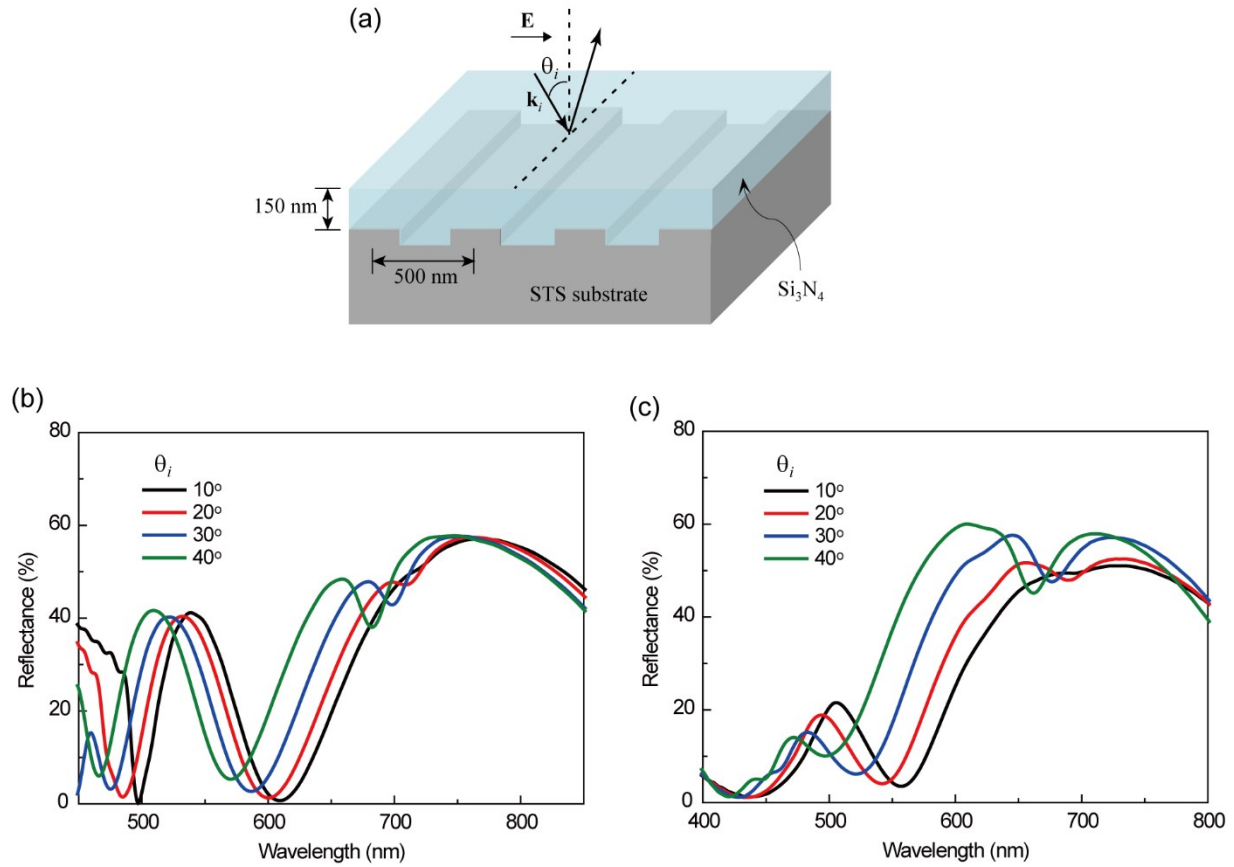
Figure S7. Angle-dependence of the reflectance spectra: (a) structure used for the simulation, (b) simulation spectra, and (c) experimental spectra.
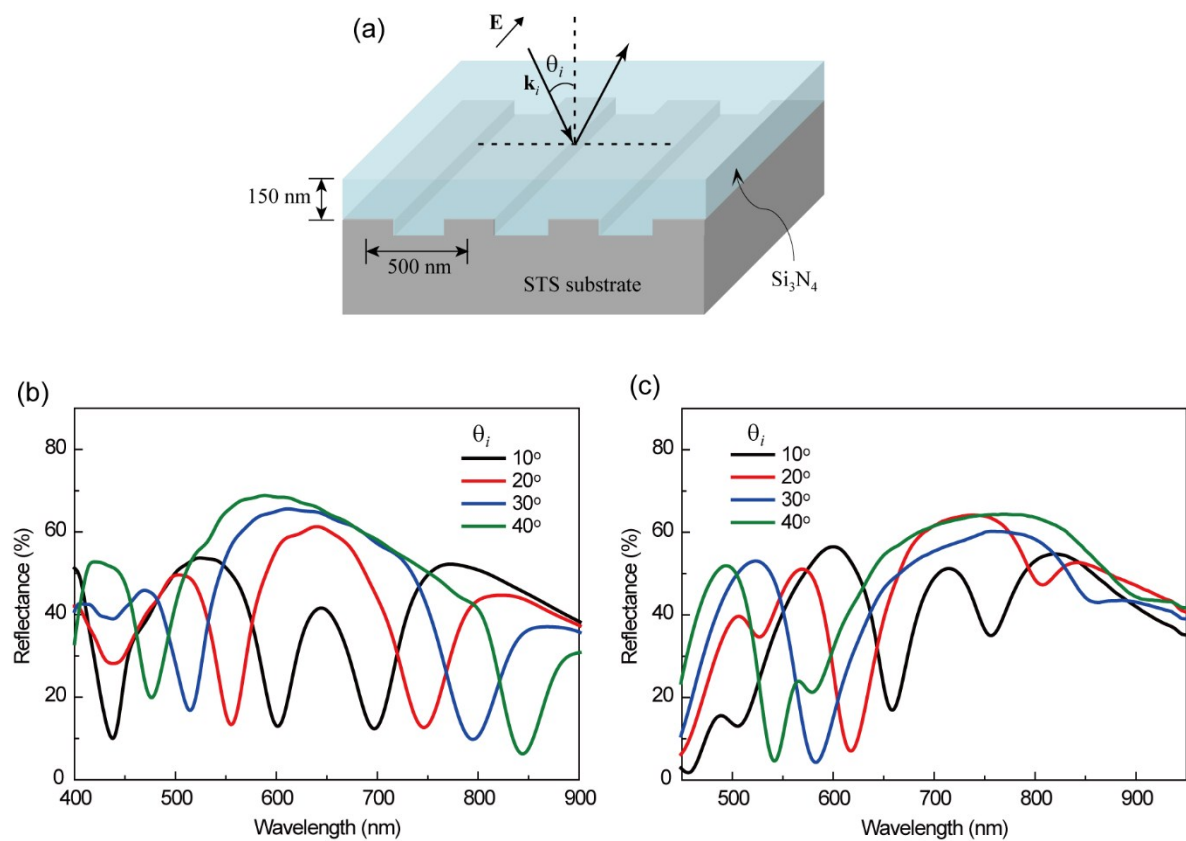
Figure S8. Angle-dependence of the reflectance spectra: (a) structure used for the simulation, (b) simulation spectra, and (c) experimental spectra.