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Supporting information for article:

Two-step crystal–crystal phase transformation of *N*-salicylidene-*p*-aminobenzoic acid by gas–solid reaction with aqua–ammonia vapour

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Figure S1 Crystal packings of **1-rS**, **1-S α** , **1-S β** and **1-N** (projection down the *b*- and *c*-axis).

Figure S2 PXRD pattern change of **1-S α** by the exposure to aqua-ammonia vapor.

Figure S3 XRD-DSC curve of **1-rS** (a) and the PXRD patterns compared to the simulation patterns of **1-rS**, **1-S α** , and **1-N**.

Figure S4 Photograph of **1-N**(a, d), **1-S α** (b,e), and **1-rS**(c,f) by optical microscope and scanning electron microscope, the single crystals are crystallized from solution.

Figure S5 SEM images of **1-S α** (g, g'), and **1-rS**(h,h'), the samples are prepared by the exposure **1-N** to the aqua-ammonia vapor at 10 and 100 minutes.

Figure S6 Photographs showing the photochromic activities of **1-N**, **1-S α** and **1-rS** prepared by the exposure **1-N** to the aqua-ammonia vapor at 10 and 100 minutes, and their solid-state UV-Vis. spectra before and after UV irradiation.

Table S1 Crystal parameters of **1-N**, **1-S α** , **1-S β** , and **1-rS**

	1-rS	1-N	1-Sα	1-Sβ
Chemical formula	C ₁₄ H ₁₄ N ₂ O ₃	C ₁₄ H ₁₁ NO ₃	C ₁₄ H _{12.5} N _{1.5} O ₃	C ₁₄ H _{12.5} N _{1.5} O ₃
Space group	<i>C2/c</i>	<i>P2₁/c</i>	<i>C2/c</i>	<i>Cc</i>
<i>a</i> / Å	43.803(4)	5.8687(3)	54.9724(10)	42.2276(8)
<i>b</i> / Å	4.6835(5)	4.7866(2)	3.8261(1)	4.6505(1)
<i>c</i> / Å	12.2643(10)	41.133(2)	11.3856(2)	12.2783(2)
β / °	96.105(2)	92.208(3)	91.054(1)	107.684(1)
Volume / Å ³	2501.8(4)	1154.61(9)	2394.33(9)	2297.27(8)
<i>Z</i> / <i>Z'</i>	8/1	4/1	8/1	8/2
Final <i>R</i> indices	<i>R</i> ₁ = 0.0571	<i>R</i> ₁ = 0.0492	<i>R</i> ₁ = 0.0491	<i>R</i> ₁ = 0.0401
[<i>I</i> > 2 σ (<i>I</i>)]	<i>wR</i> ₂ = 0.1397	<i>wR</i> ₂ = 0.1219	<i>wR</i> ₂ = 0.1238	<i>wR</i> ₂ = 0.1084
CCDC number		872829	1884035	1884036

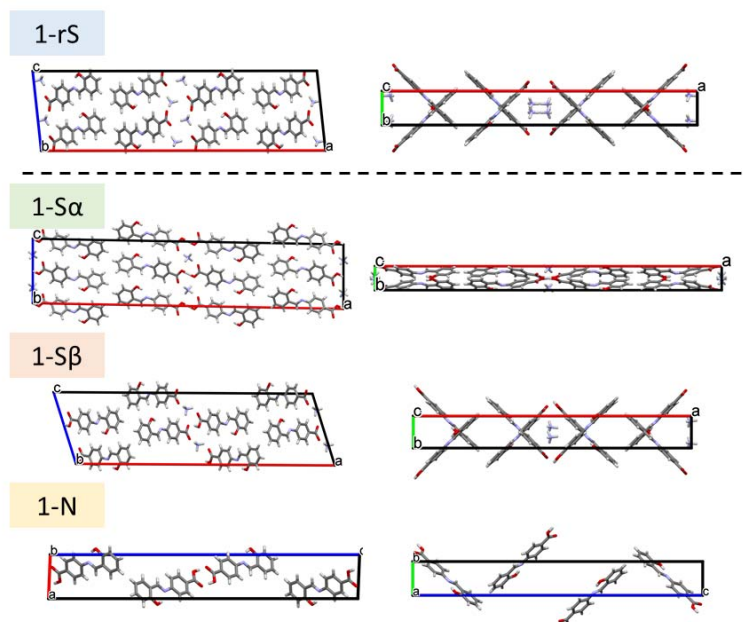


Figure S1

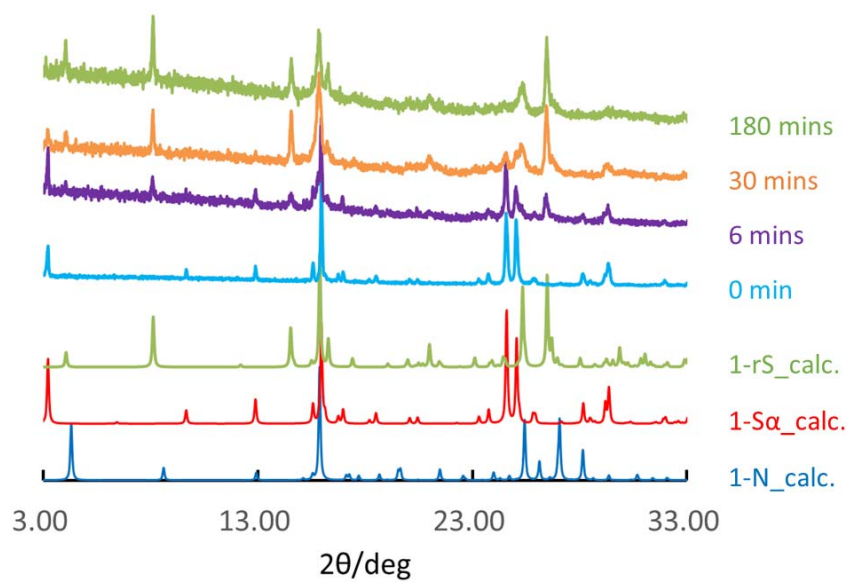


Figure S2

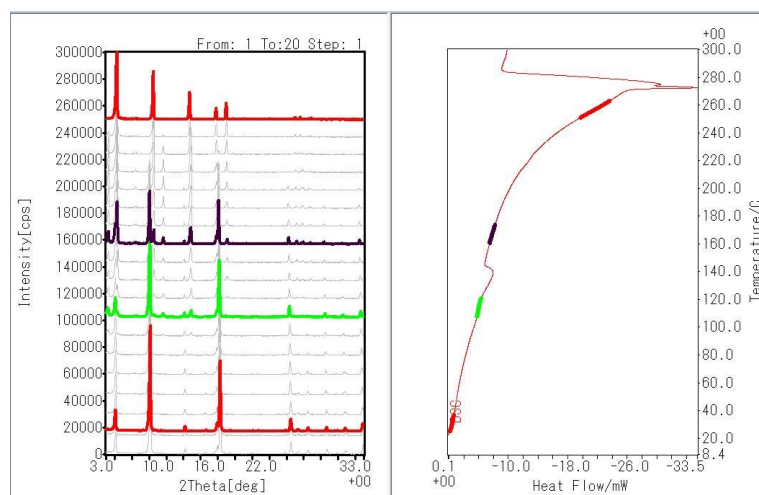


Figure S3a

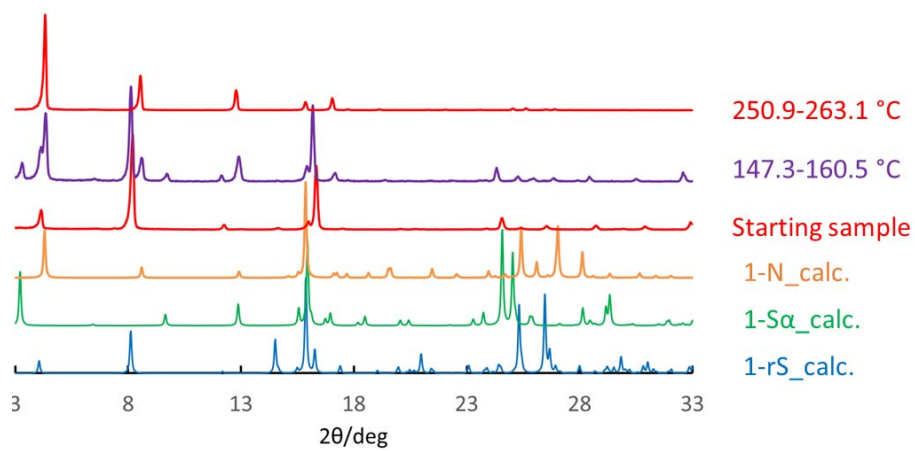


Figure S3b

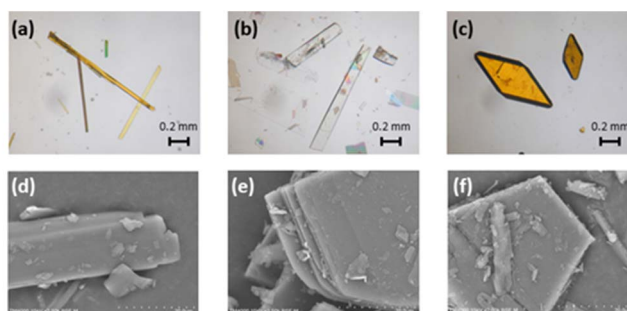


Figure S4

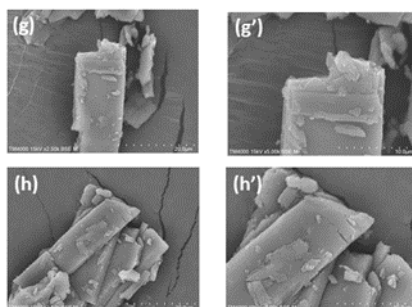


Figure S5

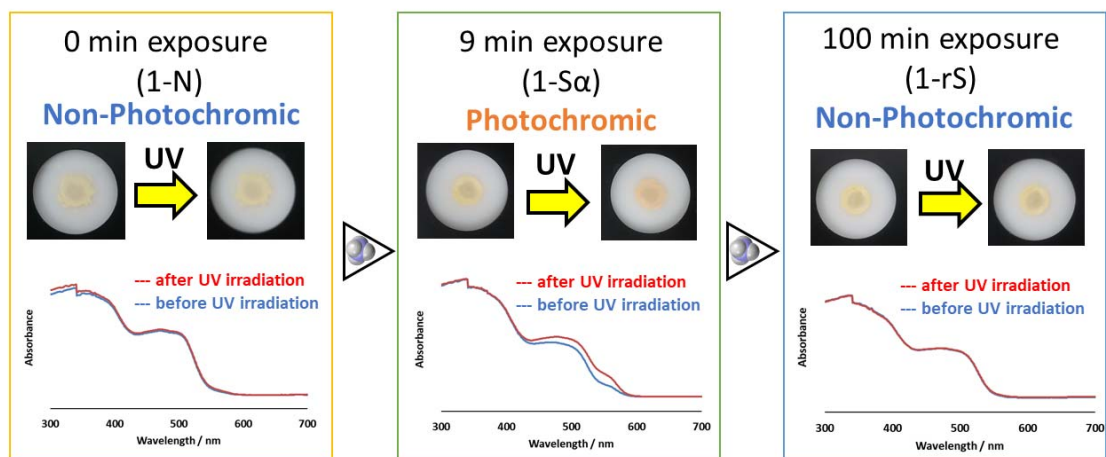


Figure S6