Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Realisation and optical engineering of linear variable bandpass filters in nanoporous anodic alumina photonic crystals

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$t_{Etching}$ (min)	***Withdraw Speed*** (μm s^{-1})
2	8.3
3	5.6
4	4.2
5	3.3
6	2.8
7	2.4
8	2.0
9	1.9
10	1.7

Table S1. Correlation between etching time ($t_{Etching}$) and dip coating withdraw rate used to produce the NAA-LVBPFs analysed in our study (NB: the diameter of NAA-LVBPFs was 10 mm).

2 min	3 min	4 min	5 min	6 min	7 min	8 min	9 min	10 min
(1,200,34)	(20,207,58)	(20,200,58)	(21,202,61)	(1,206,16)	(1,67,107)	(46,103,162)	(10,101,216)	(18,81,253)
(1,219,41)	(20,204,61)	(20,200,60)	(20,210,72)	(1,248,47)	(3,77,157)	(51,107,187)	(14,98,253)	(35,79,253)
(1,222,47)	(20,208,64)	(20,207,69)	(20,222,105)	(1,225,104)	(3,88,217)	(60,101,217)	(31,85,254)	(52,58,254)
(1,218,54)	(20,220,79)	(20,221,96)	(20,235,154)	(1,149,170)	(4,83,251)	(71,94,243)	(50,65,254)	(67,21,254)
(1,227,72)	(20,236,108)	(20,229,134)	(20,234,196)	(1,103,220)	(16,63,254)	(7,.76,248)	(62,31,254)	(54,1,253)
(1,238,109)	(20,233,153)	(20,236,171)	(20,215,212)	(12,92,253)	(45,51,253)	(78,36,232)	(78,1,254)	(25,1,203)
(1,235,177)	(20,230,176)	(20,238,202)	(27,151,240)	(42,77,253)	(106,16,254)	(70,16,200)	(73,1,254)	(11,2,60)
(5,218,181)	(20,235,192)	(20,207,222)	(47,126,253)	(51,56,254)	(81,1,254)	(42,13,135)	(28,5,135)	(7,4,7)
(180, 94, 34)	(149,155,23)	(170, 137, 31)	(103,212,2)	(121,157,3)	(94,54,1)	(82,118,1)	(119,185,1)	(18,246,35)
(166, 102, 36)	(135,179,32)	(159,117,11)	(116,204,2)	(142,193,5)	(81,154,2)	(99,146,1)	(122,202,3)	(4,237,94)
(154, 117, 36)	(90,211,52)	(111,165,15)	(136,218,1)	(148,218,4)	(36,207,26)	(93,211,1)	(69,232,13)	(8,211,159)
(170, 137, 31)	(94,217,52)	(105,199,20)	(56,243,36)	(98,225,16)	(13,216,41)	(88,226,1)	(79,230,31)	(19,191,183)
(180,156, 27)	(94,220,52)	(106,216,21)	(57,236,42)	(56,223,30)	(8,230,50)	(89,226,2)	(36,249,109)	(21,172,183)
(176,179,25)	(88,223,55)	(101,224,25)	(78,232,45)	(33,224,45)	(7,253,69)	(43,236,49)	(32,245,166)	(19,157,172)
(156, 189,27)	(153,209,46)	(97,227,26)	(54,239,63)	(9,233,97)	(16,248,138)	(18,226,137)	(28,240,188)	(28,149,203)
(154, 191, 36)	(148,221,60)	(105,235,25)	(64,238,80)	(26,237,151)	(6,244,168)	(9,205,187)	(26,247,200)	(25,159,239)
(81, 71, 65)	(69, 55, 56)	(101, 72, 74)	(81, 65, 65)	(49, 41, 40)	(59, 46, 43)	(67, 50, 50)	(56, 37, 37)	(45, 37, 37)
(92, 78, 75)	(103, 74, 77)	(127, 80, 81)	(78, 57, 58)	(69, 36, 38)	(87, 61, 63)	(104, 42, 43)	(62, 30, 33)	(80, 29, 30)
(120, 100, 99)	(122, 74, 78)	(148, 75, 78)	(115, 60, 65)	(143, 44, 44)	(131, 57, 60)	(202, 52, 39)	(136, 31, 28)	(204, 52, 29)
(122, 100, 97)	(156, 69, 71)	(186, 73, 71)	(194, 65, 62)	(227, 69, 45)	(230, 81, 58)	(254, 108, 28)	(235, 75, 24)	(251, 101, 15)
(122, 93, 93)	(196, 67, 64)	(236, 87, 66)	(245, 85, 54)	(254, 114, 36)	(254, 122, 44)	(254, 157, 4)	(252, 123, 6)	(254, 144, 1)
(135, 95, 98)	(230, 80, 62)	(254, 102, 59)	(254, 114, 41)	(254, 147, 12)	(254, 148, 15)	(254, 206, 1)	(247, 165, 1)	(248, 208, 3)
(150, 93, 99)	(254, 109, 58)	(254, 121, 38)	(254, 138, 28)	(254, 178, 2)	(254, 179, 1)	(254, 252, 11)	(245, 225, 5)	(250, 235, 10)
(198, 98, 98)	(254, 135, 53)	(254, 151, 23)	(254, 147, 23)	(254, 207, 3)	(248, 233, 8)	(255, 255, 40)	(254, 252, 23)	(207, 222, 38)

Table S2. Correlation between interferometric colour and RGB values obtained by analysing 1 mm^2 areas along the etching path of NAA-LVBPFs (top – T_P = 650 s, centre – T_P = 750 s, and bottom – T_P = 850 s).

T_P (s)	Fitting Line	R^2
650	$\lambda_{C\text{-}PSB}$ (nm) = 7.4 · $t_{Etching}$ (min) + 4.8	0.9944
750	$\lambda_{C\text{-}PSB}$ (nm) = 7.7 · $t_{Etching}$ (min) + 17.4	0.9963
850	$\lambda_{C\text{-}PSB}$ (nm) = 15.5 · $t_{Etching}$ (min) - 12.5	0.9087

Table S3. Values of linear correlation (linear fittings shown in Figure S1) between the position of the central wavelength ($\lambda_{C\text{-}PSB}$) and the etching time ($t_{Etching}$) for NAA-LVBPFs produced with T_P = 650, 750, and 850 s.

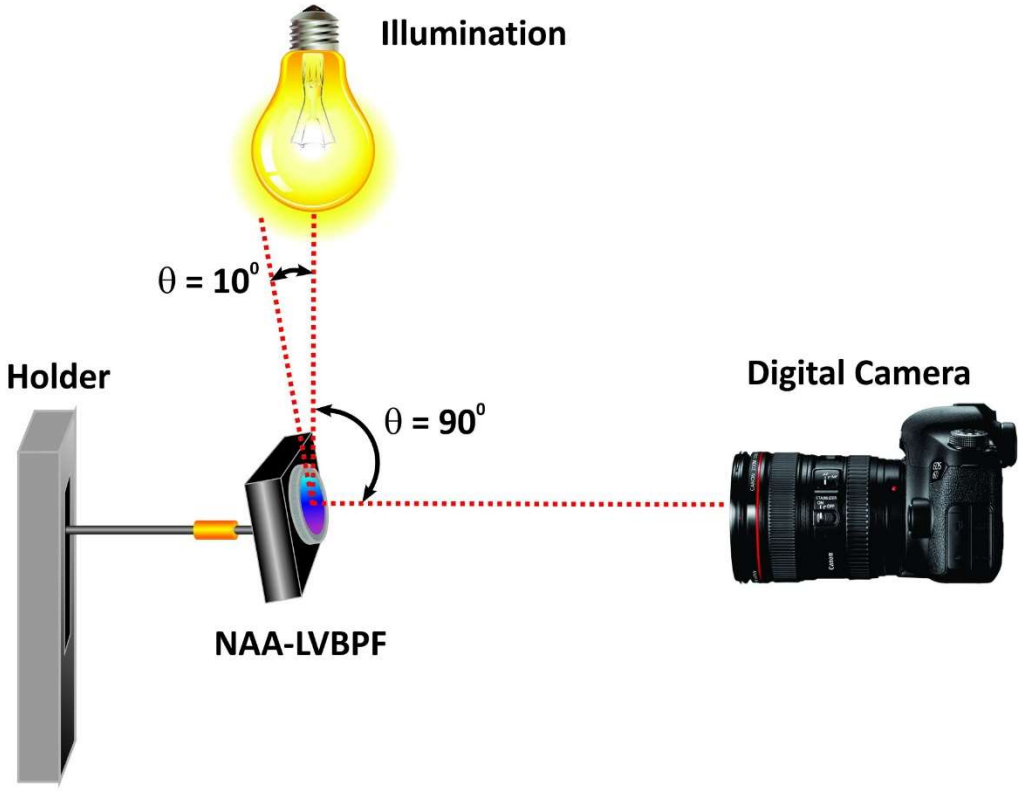

Figure S1. Schematic showing the position of the different elements (digital camera, illumination, and NAA-LVBPF) used to acquire digital images of NAA-LVBPFs.

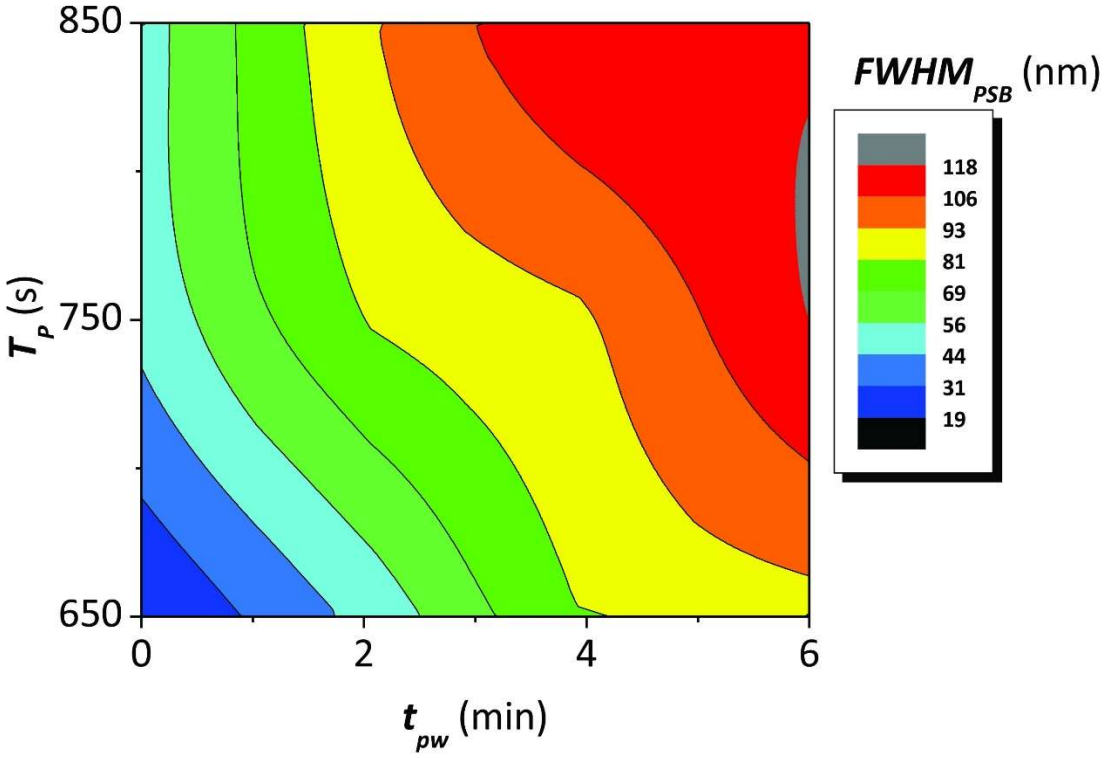

Figure S2. Dependence of the FWHM of the photonic stopband of NAA-LVBPFs produced with T_P = 650, 750, and 850 s with the etching time, for $t_{Etching}$ = 0, 2, 4, and 6 min.

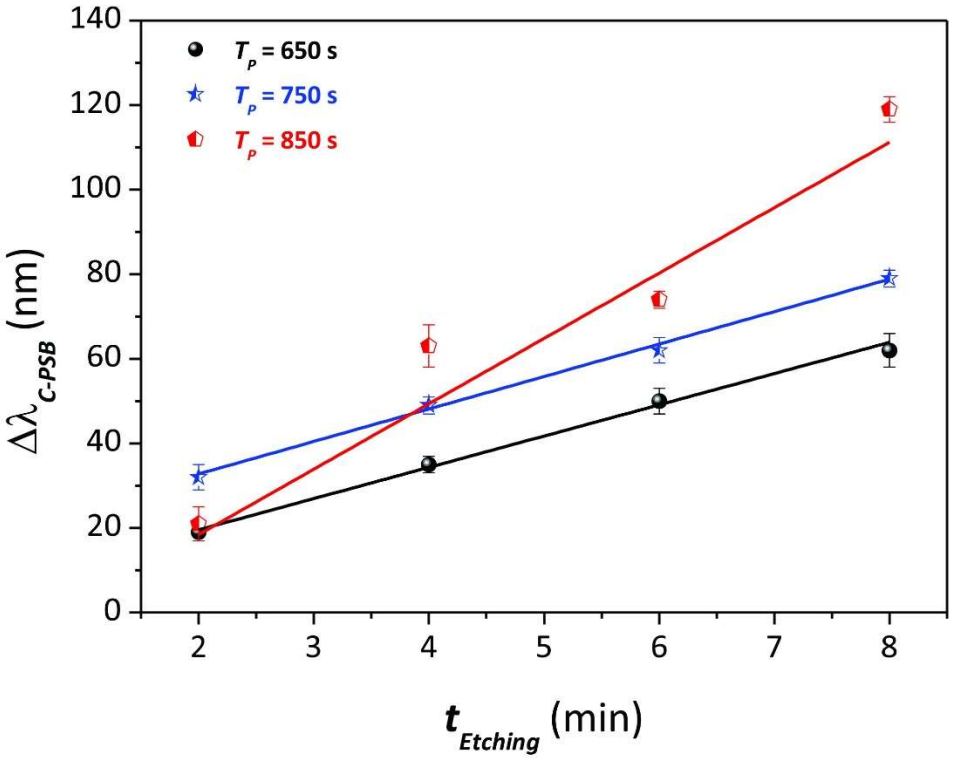

Figure S3. Linear correlation between the position of the central wavelength ($\lambda_{C\text{-}PSB}$) and the etching time ($t_{Etching}$) for NAA-LVBPFs produced with T_P = 650, 750, and 850 s.