

Supporting Information 1

SI 1. The abbreviations, commercial sources, and melting points of the raw materials used in this study.

Raw materials	Source	Melting point (°C)
Hydroquinone (HQ)	Wako Chemical	173 ^a
Methylhydroquinone (MHQ)	Tokyo Chemical Industry (TCI)	126 ^b
Methoxyhydroquinone (MeOHQ)	TCI	89 ^a
Phenylhydroquinone (PHQ)	Aldrich	100 ^b
1,4-Dihydroxynaphthalene (14DHN)	TCI	
Resorcinol (RC)	TCI	111 ^b
4,4'-Biphenol (44BP)	TCI	287 ^a
3,3'-Diphenyl-4,4'-biphenol (DP44BP)	Honshu Chemical Industry	149 ^a
MHQHB	Home-made	318 ^a
4-Nitrobenzoyl chloride (4-NBC)	TCI	73 ^b

^a Data determined from the endothermic peak measured at a heating rate of 5 °C min⁻¹ on DSC.

^b Data from the safety data sheet

Supporting Information 2

SI 2. The abbreviations, commercial sources, purification conditions, and melting points of the ester-linked diamines synthesized in this study.

Ester-linked diamines	Solvents for recrystallization	Vacuum-drying condition	Melting point ^a (°C)	Molecular formula (F_w , g/mol)	C, H, N (%) (Calcd.)	C, H, N (%) (Found)
AB-HQ	GBL	200 °C/12 h	294	C ₂₀ H ₁₆ O ₄ N ₂ (348.36)	68.96, 4.63, 8.04	68.84, 4.50, 7.62
AB-MHQ	DOX	100 °C/12 h	275	C ₂₁ H ₁₈ O ₄ N ₂ (362.38)	69.60, 5.01, 7.73	69.84, 4.98, 7.65
AB-MeOHQ	DOX	140 °C/12 h	254	C ₂₁ H ₁₈ O ₅ N ₂ (378.38)	66.66, 4.79, 7.40	66.47, 4.77, 7.00
AB-PhHQ	DOX/CF (3/2, v/v)	110 °C/12 h	264	C ₂₆ H ₂₀ O ₄ N ₂ (424.46)	-----	-----
AB-44BP	GBL	180 °C/12 h	-----	C ₂₆ H ₂₀ O ₄ N ₂ (424.46)	73.57, 4.75, 6.60	73.41, 4.78, 5.95
AB-DP44BP	GBL	200 °C/12 h	323	C ₃₈ H ₂₈ O ₄ N ₂ (576.65)	79.15, 4.89, 4.86	78.76, 4.98, 4.71
AB-14DHN	DMF + small quantity of EtOH	160 °C/12 h	274	C ₂₄ H ₁₈ O ₄ N ₂ (398.42)	72.35, 4.55, 7.03	72.37, 4.60, 6.92

^a Data determined from the endothermic peak measured at a heating rate of 5 °C min⁻¹ on DSC.

GBL = γ -Butyrolactone, DOX = 1,4-dioxane, CF = Chloroform, DMF = *N,N*-dimethylformamide.

Supporting Information 3

SI 3. The abbreviations, commercial sources, purification conditions, and melting points of the common monomers used in this study.

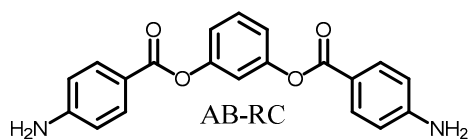
Common and ester-containing diamines	Source	Solvents for recrystallization	Vacuum-drying condition	Melting point ^a (°C)
Diamines				
4,4'-Oxydianiline (4,4'-ODA)	Wako Chemical	-----	50 °C/12 h	192
Bis(4-aminophenyl)terephthalate (BTPP)	Wakayama Seika	-----	50 °C/12 h	238
Tetracarboxylic dianhydrides				
Pyromellitic dianhydride (PMDA)	Mitsubishi Gas Chemical	-----	160 °C/24 h	286
3,3',4,4'-Biphenyltetracarboxylic dianhydride (s-BPDA)	Tokyo Chemical Industry (TCI)	-----	200 °C/12 h	300
Hydroquinone bis(trimellitate) (TA-HQ)	Home-made	1,4-Dioxane	200 °C/12 h	277

^a Data determined from the endothermic peak measured at a heating rate of 5 °C min⁻¹ on DSC. DOX = 1,4-dioxane.

Supporting Information 4

Synthesis of AB-RC

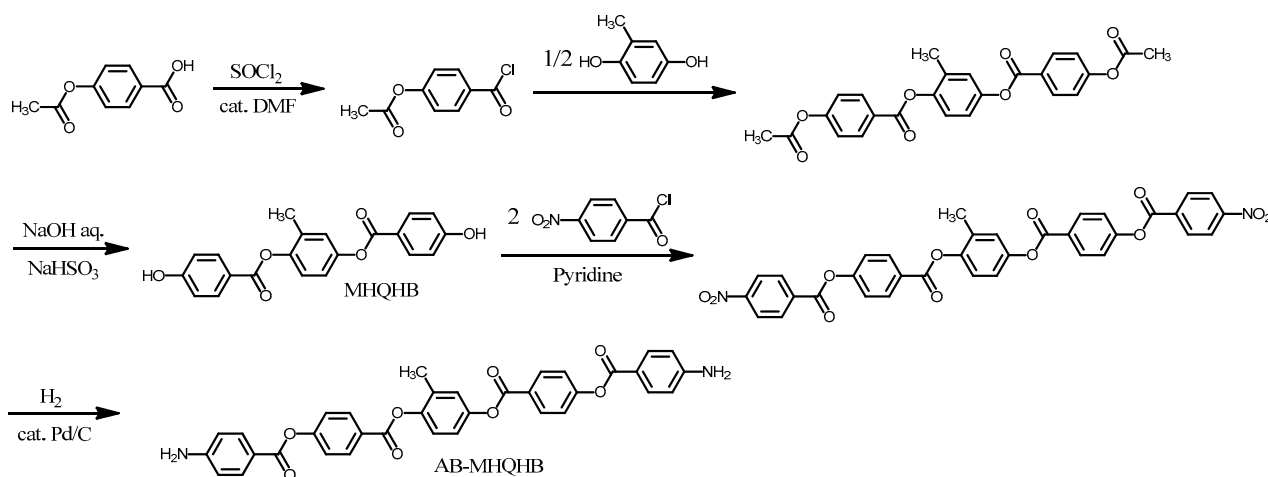
AB-RC was synthesized by the reaction of resorcinol (RC) and 4-nitrobenzoyl chloride (4-NBC) in the presence of pyridine in anhydrous tetrahydrofuran (THF) and subsequent catalytic reduction of the dinitro compound obtained (m.p.: 189 °C) in *N,N*-dimethylformamide (DMF) at 80 °C for 4 h in a hydrogen atmosphere in the presence of Pd/C. The crude product was dissolved in a minimum quantity of hot DMF, followed by addition of a few drops of water to the hot DMF solution for inducing recrystallization. The precipitated black crystal was collected by filtration and dried at 120 °C for 12 h under vacuum. The analytical data of the product are as follows. Melting point (differential scanning calorimetry, DSC): 202 °C. FT-IR (KBr plate method, cm^{-1}): 3480, 3378, 3214 (amine, N–H), 1715 (ester, C=O), 1514 (1,4-phenylene). ^1H -NMR (400 MHz, $\text{DMSO}-d_6$, δ , ppm): 7.80 [d, 4H (relative integrated intensity: 4.42H), J = 8.6 Hz, 3,3',5,5'-protons of the terminal aniline (AN) units], 7.48 [t, 1H (1.15H), J = 8.6 Hz, 5-proton of the central RC unit], 7.14–7.12 [m, 3H (3.45H), 2- + 4,6-protons of RC], 6.64 (d, 4H (4.59H), J = 8.7 Hz, 2,2',6,6'-protons of AN], 6.20 [s, 4H (4.00H), amine]. The results confirm that the product is the desired diamine (AB-RC) shown below:



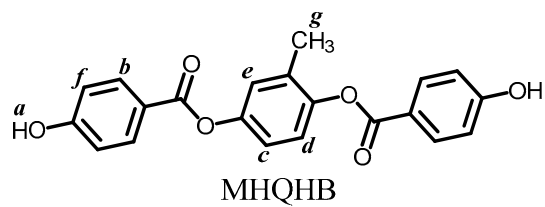
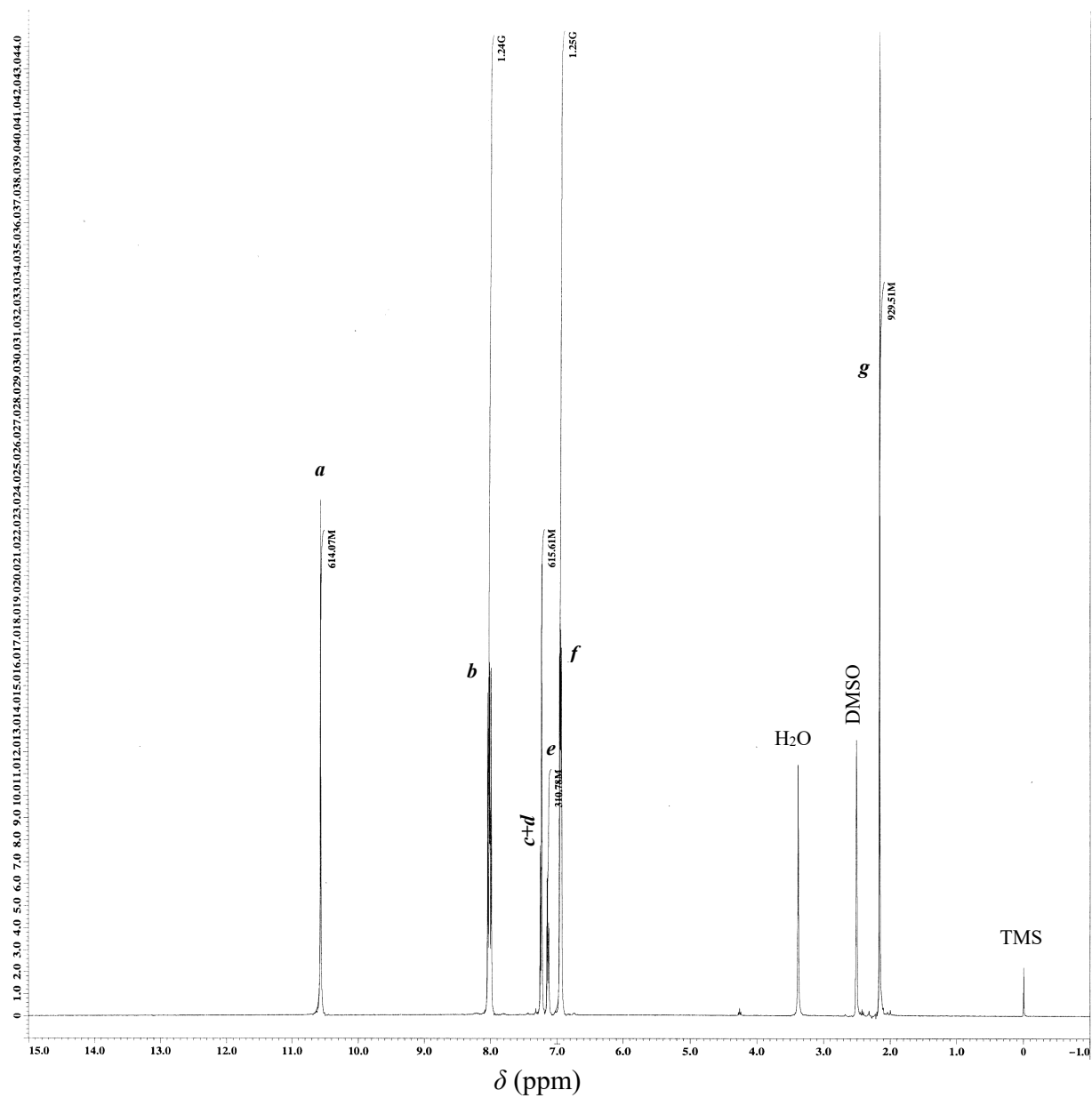
Supporting Information 5

Synthesis of AB-MHQHB

AB-MHQHB was synthesized by the reaction of an ester-linked bisphenol (MHQHB) and 4-NBC and subsequent catalytic reduction, according to the reaction schemes shown below.



First, the ester-linked bisphenol (MHQHB) was synthesized and recrystallization from GBL. The analytical data is as follows. Melting point (DSC): 318 °C. FT-IR (KBr plate method, cm^{-1}): 3387 (O–H), 1699 (ester, C=O), 1512, 1495 (1,4-phenylene). ^1H -NMR spectrum (400 MHz, $\text{DMSO-}d_6$) of the product is shown below. The results confirm that the product is the desired bisphenol (MHQHB).



MHQHB was reacted with 4-NBC in the presence of pyridine in anhydrous DMF. The dinitro compound obtained was recrystallized from GBL (m.p.: 268 °C) and subsequently reduced in DMF at 100 °C for 4 h in a hydrogen atmosphere in the presence of Pd/C. The crude product obtained was recrystallized twice from GBL, and dried at 200 °C for 12 h under vacuum. The analytical data of the product are as follows. Melting point (DSC): 304 °C. FT-IR (KBr plate method, cm^{-1}): 3455, 3368 (amine, N–H), 1719 (ester, C=O), 1516 (1,4-phenylene). ^1H -NMR spectrum (400 MHz, $\text{DMSO-}d_6$) of the product is shown below. The results confirm that the product is the desired diamine (AB-MHQHB):

