

## ***Electronic Supplementary Information***

### **Development of a fully bio-based hyperbranched benzoxazine**

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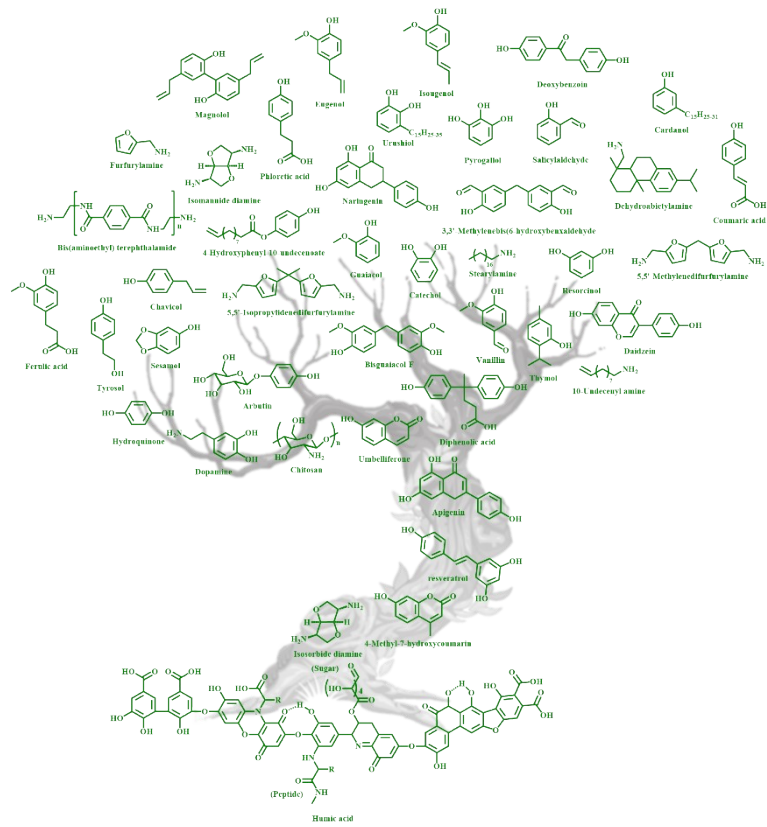
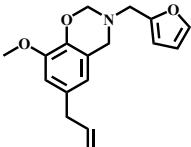
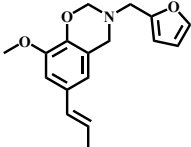
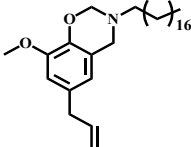
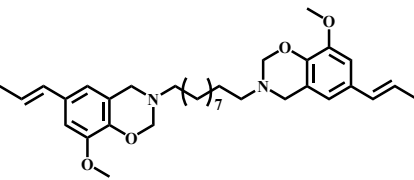
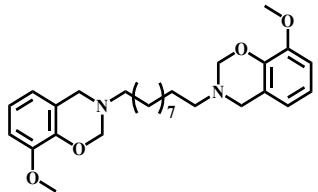
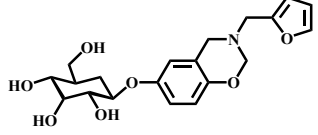
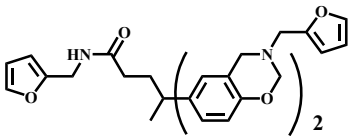
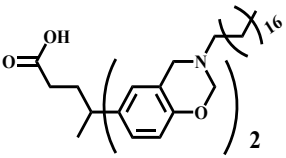
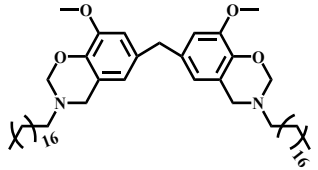
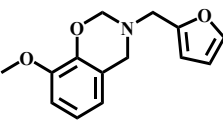


Fig. S1 Chemical structures of renewable feedstocks. 1-36

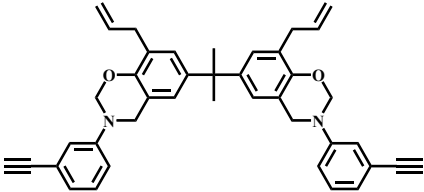
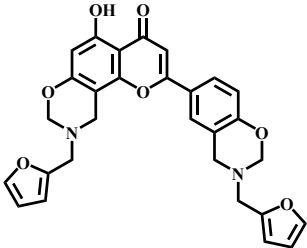
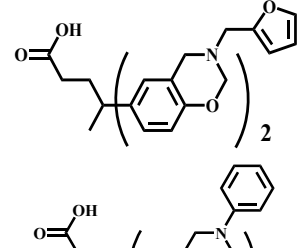
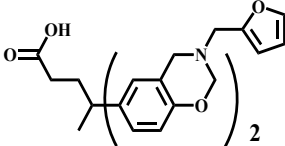
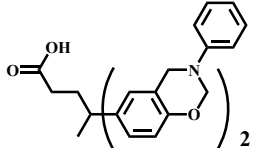
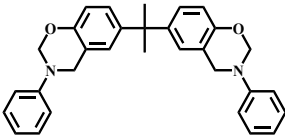
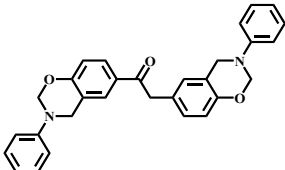
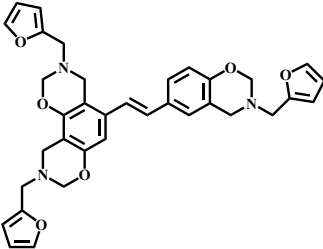
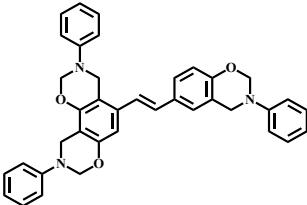
**Table S1**  $T_5$  and  $T_g$  values of fully bio-based polybenzoxazines

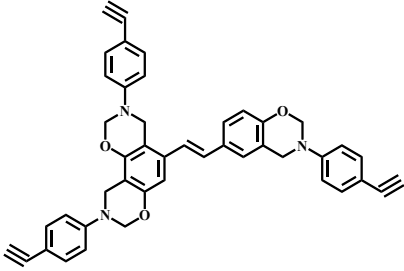
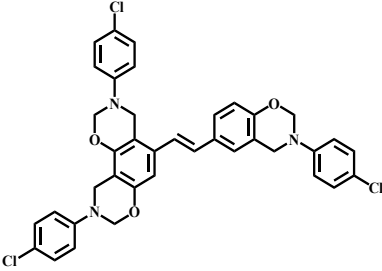
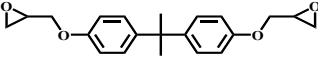
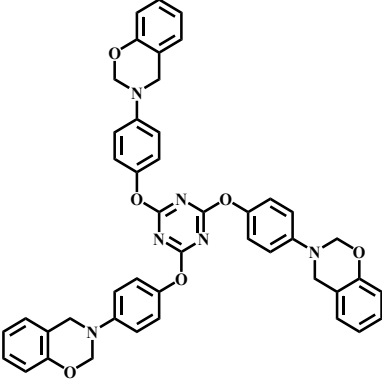
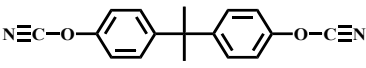
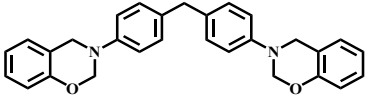
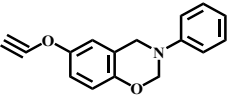
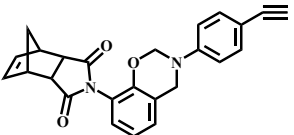
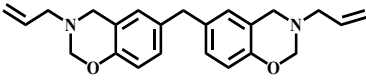
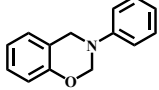
Sample names	Original structures	$T_g$ (°C)	$T_5$ (°C)	Ref.
poly(DPA-fa)		280	344	37
poly(T-fa)		232	349	35
poly(NAR-fa)		286	361	18
poly(API-fa)-1		295	301	38
poly(API-fa)-2		376	384	38
poly(RES-fa)		312	346	39
poly(AP-f)		182	296	17
poly(M-fa)		303	440	21

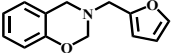
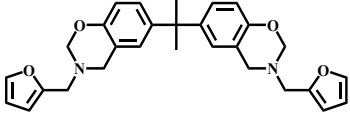
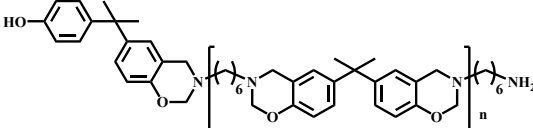
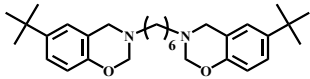
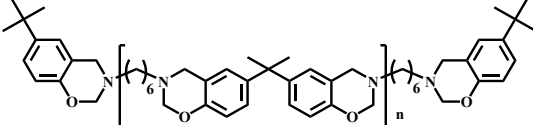
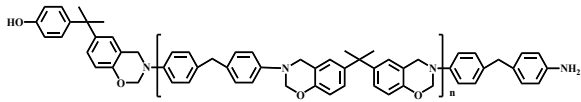
poly(E-fa)		183	338	25
poly(IE-fa)		179	375	25
poly(S-Bz)		101	313	40
poly(IE-dea)		138	340	41
poly(G-dea)		216	347	41
poly(A-Fa)		190	270	32
poly(DFA-fa)		310	382	42
poly(DaSa-BOX)		104	278	43
BGF-SPBz		124	349	36
poly(Bzf)		148	352	2

poly(Bzs)		82	329	2
P(R-Fa)		300	335	30
P(H-Fa)		280	310	30
PBz_TPo		58	284	12
PBz_TPf		145	335	12

**Table S2** CTE and  $T_g$  values of thermosets

Sample names	Original structures	CTE (ppm/°C)	$T_g$ (°C)	Ref.
poly(DBA-ac)		41.3	333	44
poly(API-fa)-1		60.9	295	38
poly(API-fa)-2		41.2	376	38
PDF		46.6	303	45
PDA		50.9	220	45
PBA		54.2	167	45
poly(BHDB-a)		48.4	311	19
poly(RES-fa)		36.2	312	39
poly(RES-a)		40.4	311	20

poly(RES-ac)		29.4	368	20
poly(RES-ch)		45.0	277	20
P(DGEBA)		76.2	165	46
P(P-tta)		32.0	265	47
P(BACY)		60.0	266	48
P(P-ddm)		59.0	183	48
P(HPPE-a)		43.0	200	49
poly(oHPNI-ac)		19.6	280	50
poly(V-BF-a)		60.6	220	51
P-ABz		56	161	52

P-FBz		45	315	52
BPA-FBz		37	308	52
P-AH		90.6	226	53
P-TH		92.9	146	53
P-TAH		64.6	195	53
P-AM		111.0	245	53



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