

Supplementary Info

Syntheses, structural characterizations and biological activities of *spiro-ansa-spiro-cyclotriphosphazenes*

Nisan Sevin Bařterzi,^a Selen Bilge Koçak,^{*a} Aytuğ Okumuř,^a Zeynel Kılıç,^a Tuncer Hökelek,^b Ömer Çelik,^c Mustafa Türk,^d L. Yasemin Koç,^e Leyla Açık^e and Betül Aydın^e

^a Department of Chemistry, Ankara University, 06100 Tandoğan-Ankara, Turkey

^b Department of Physics, Hacettepe University, 06800 Beytepe-Ankara, Turkey

^c Department of Physics, Dicle University, 21280 Sur-Diyarbakır, Turkey

^d Department of Bioengineering, Kırıkkale University, 71450 Yahşihan-Kırıkkale, Turkey

^e Department of Biology, Gazi University, 06500 Beşevler-Ankara, Turkey

e-mail: sbilge@science.ankara.edu.tr

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Table

- **Table 1S** 2D ¹H-¹³C HSQC and HMBC correlations for **9b** and **9c**

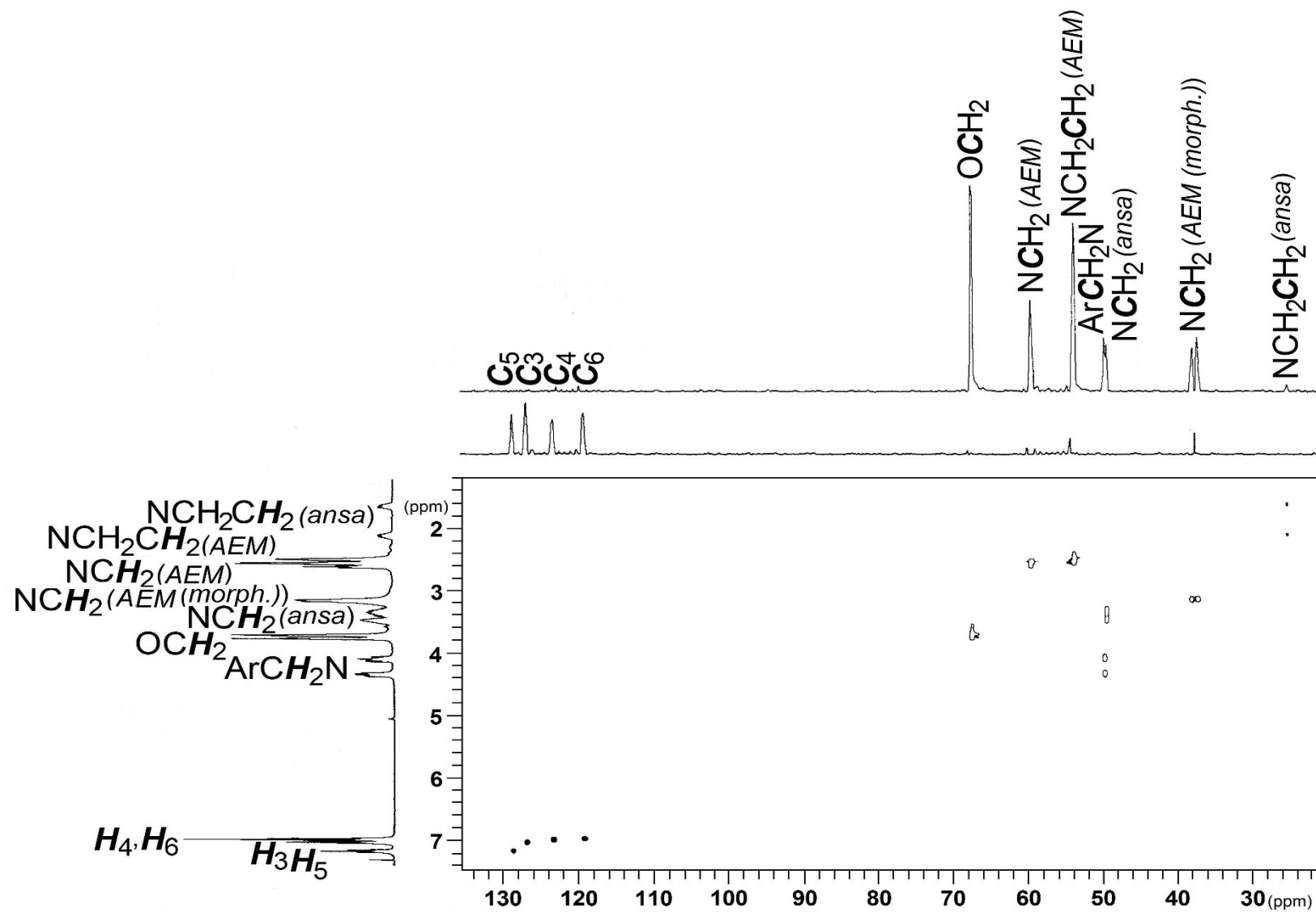


Fig. 1S HSQC spectrum of **9b**.

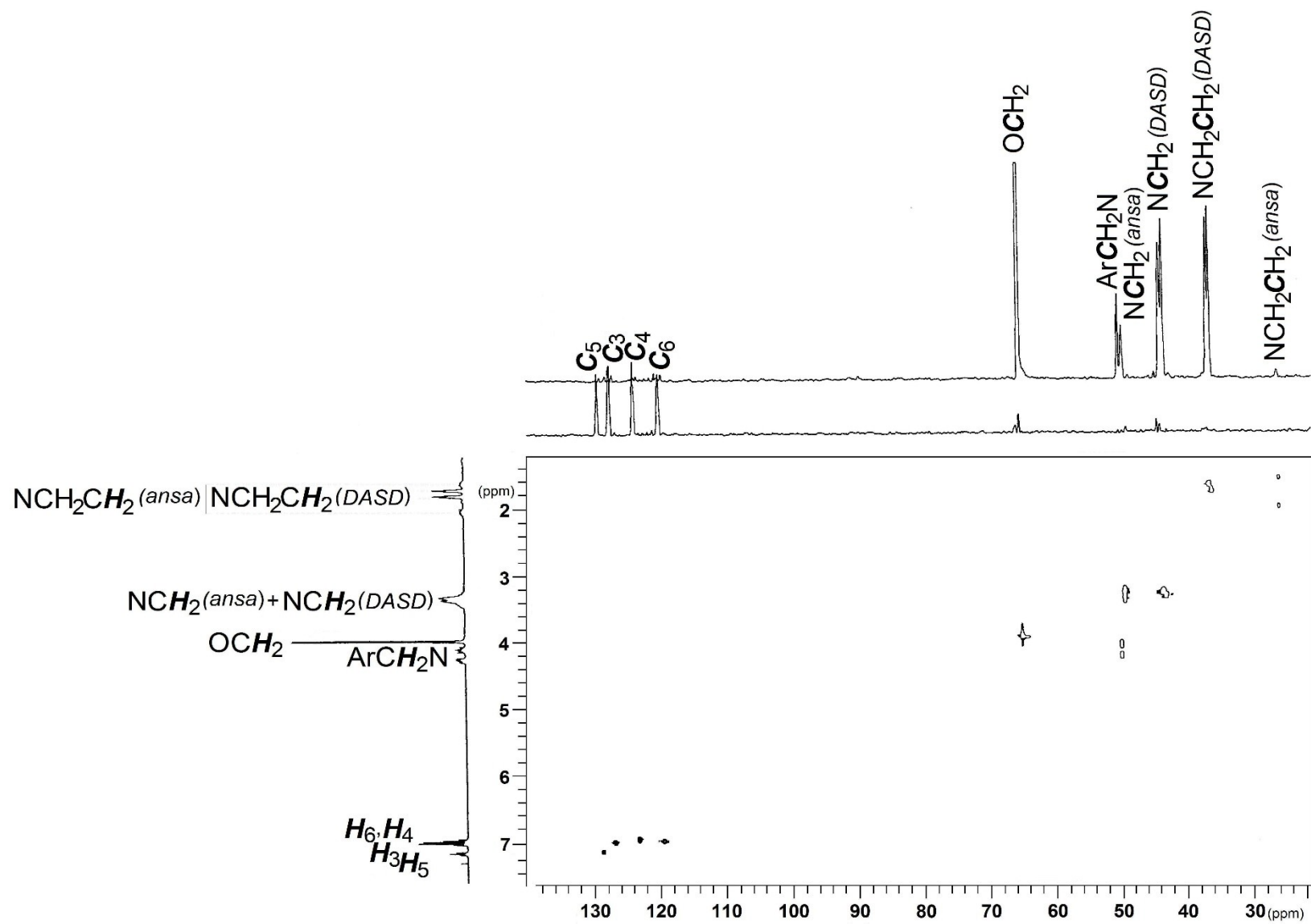


Fig. 2S HSQC spectrum of **9c**.

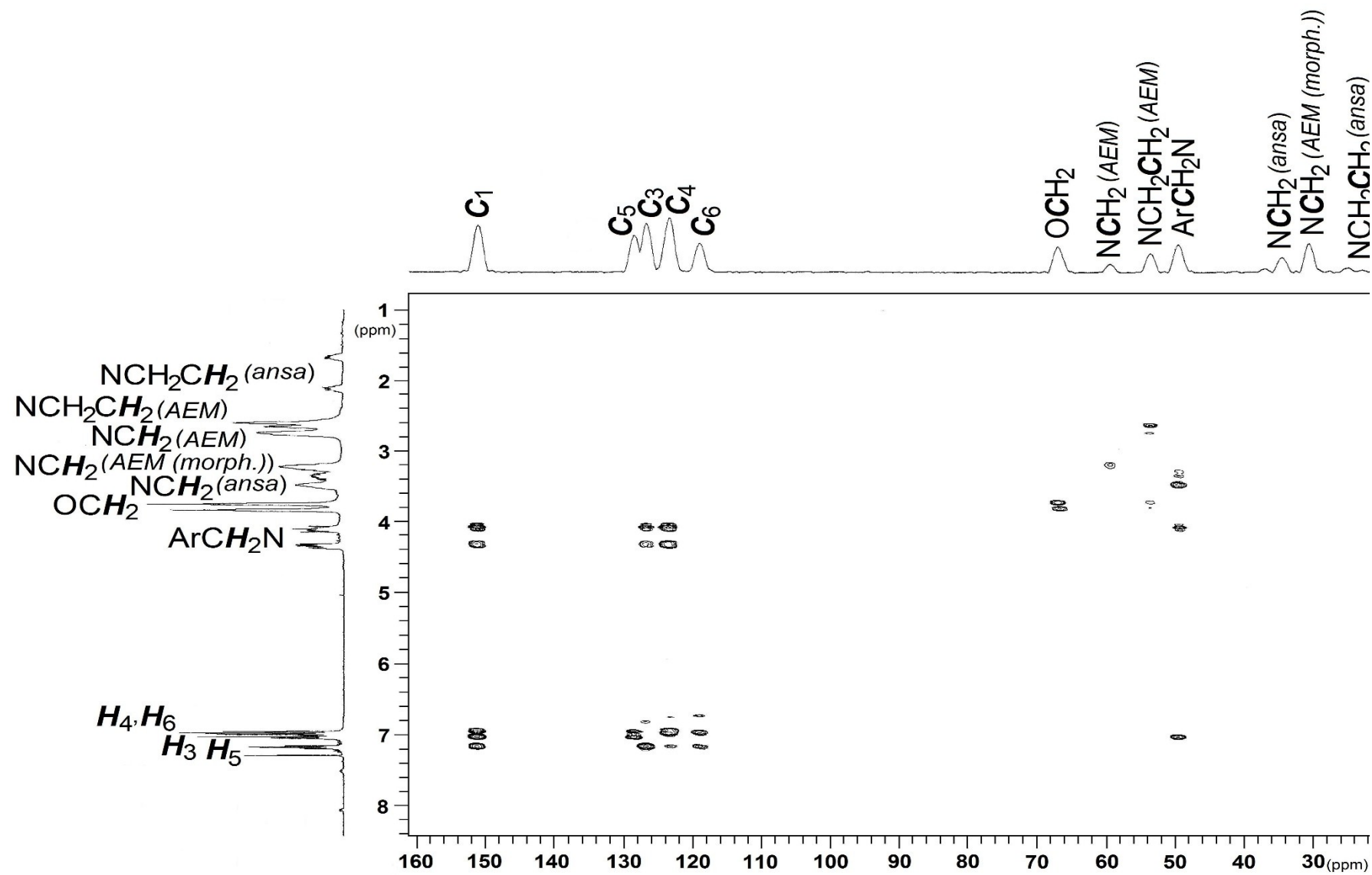


Fig. 3S HMBC spectrum of **9b**.

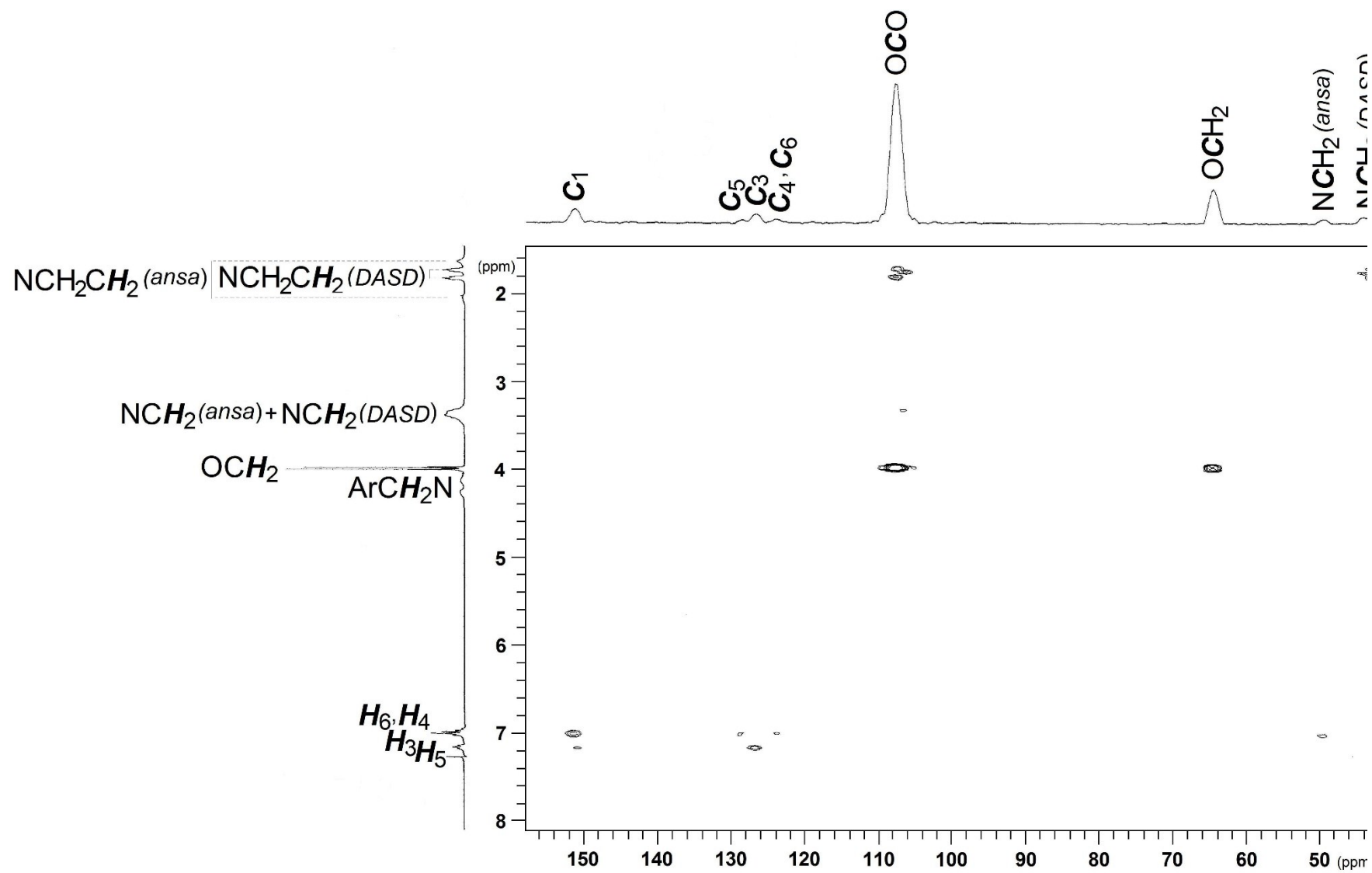


Fig. 4S HMBC spectrum of **9c**.

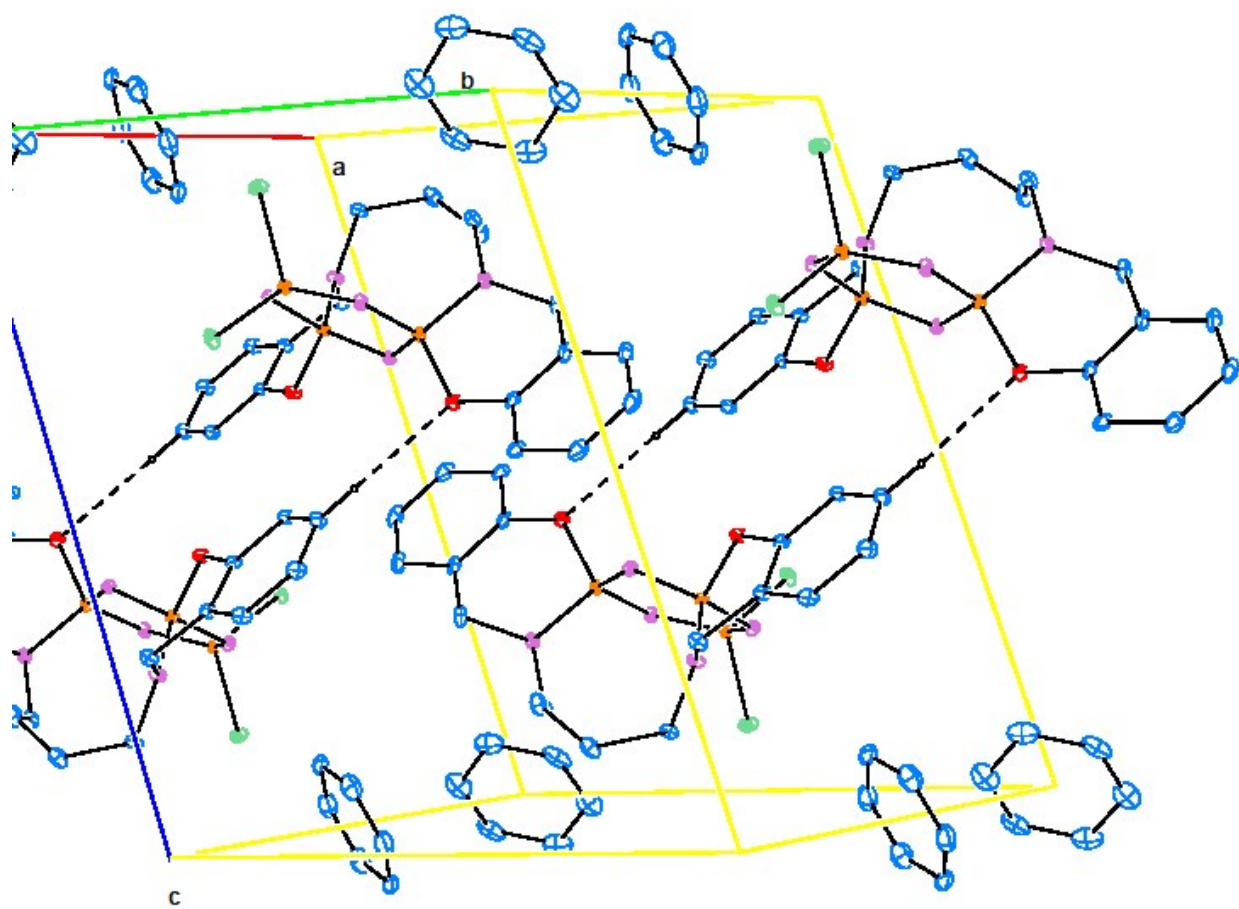


Fig. 5S Packing diagram of **8**.

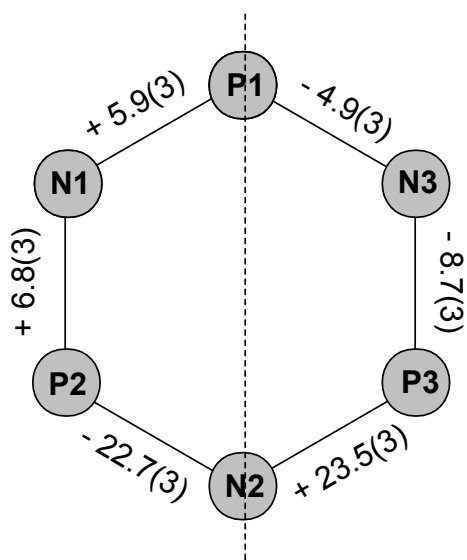


Fig. 6S The shape of the phosphazene ring in **8** with torsion angles (deg) given.

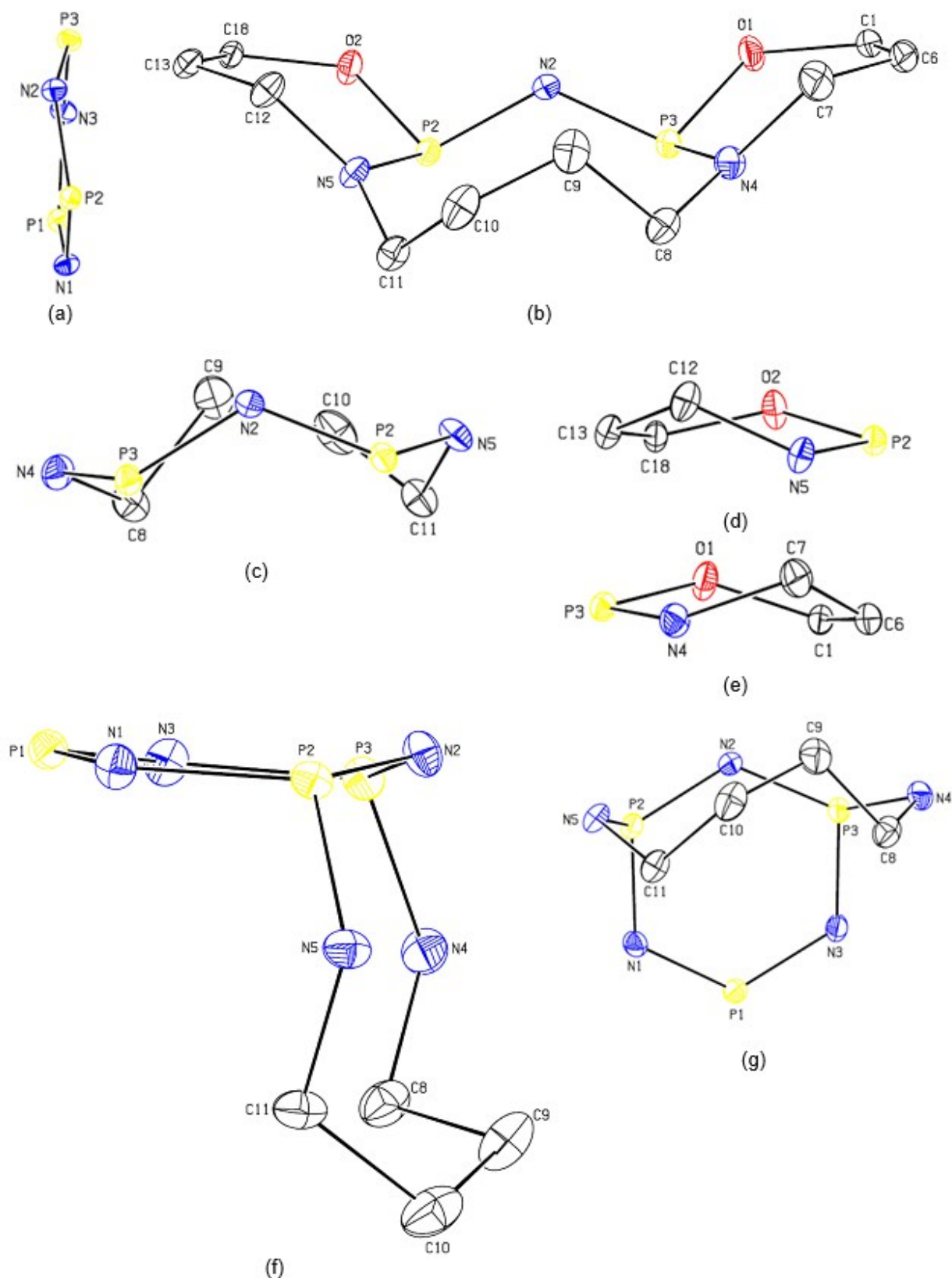


Fig. 7S The conformations of (a) phosphazene, (b) *spiro* and *ansa*, (c) *ansa*, (d) and (e) *spiro* rings, (f) and (g) the bicyclic system made up of phosphazene and the *ansa* rings of **8**.

Table S 2D ^1H - ^{13}C HSQC and HMBC correlations for **9b** and **9c**

		HSQC		HMBC [$J(\text{C},\text{H})$]		
Atom		1J	2J	3J	4J	Spatial J
9b	NCH_2CH_2 [ansa]	NCH_2CH_2 [ansa]	—	—	—	—
	NCH_2CH_2 [AEM]	NCH_2CH_2 [AEM]	—	—	—	—
	NCH_2 [AEM]	NCH_2 [AEM]	—	NCH_2CH_2 [AEM]	—	—
	NCH_2 [ansa]	NCH_2 [ansa]	—	ArCH_2N	—	—
	NCH_2 [AEM (morph.)]	NCH_2 [AEM (morph.)]	—	NCH_2 [AEM]	—	—
	OCH_2	OCH_2	—	—	—	NCH_2CH_2 [AEM]
	ArCH_2N	ArCH_2N	—	C_1, C_3	C_4	—
	ArH H_3	C_3	—	$\text{ArCH}_2\text{N}, \text{C}_1, \text{C}_5$	—	—
	H_4	C_4	C_5	C_6	—	—
	H_5	C_5	C_6	C_1, C_3	—	—
	H_6	C_6	C_1, C_5	C_4	—	—
9c	NCH_2CH_2 [ansa]	NCH_2CH_2 [ansa]	—	—	—	—
	NCH_2CH_2 [DASD]	NCH_2CH_2 [DASD]	NCH_2 [DASD], OCO	—	—	—
	NCH_2 [ansa]	NCH_2 [ansa]	—	—	—	—
	NCH_2 [DASD]	NCH_2 [DASD]	—	OCO	—	—
	OCH_2	OCH_2	—	OCO	—	—
	ArCH_2N	ArCH_2N	—	—	—	—
	ArH H_3	C_3	—	—	—	NCH_2 [ansa]
	H_4	C_4	—	—	—	—
	H_5	C_5	—	C_1, C_3	—	—
	H_6	C_6	C_1, C_5	C_4	—	—