SYNTHESIS OF 2-(4'-ARYLAMINOSULFONYLBIPHENYL-4-YL)-5-PHENYL-1,3,4-OXADIAZOLE

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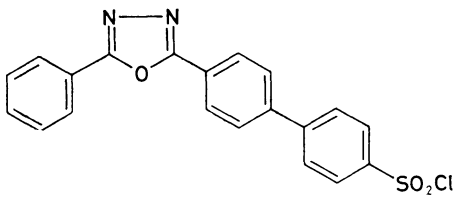
The preparation of the title sulfonamides is a part of syntheses of the compounds based on 2-(biphenyl-4-yl)-5-phenyl-1,3,4-oxadiazole that we have described[1,2] in previous papers.

EXPERIMENTAL

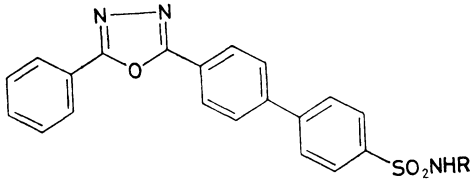
The melting points are not corrected, IR spectra (KBr, cm^{-1}), ^1H NMR spectra (400·136 MHz, tetramethylsilane as internal standard, in heptadeuteriodimethylformamide).

2-(4'-Arylaminosulfonylbiphenyl-4-yl)-5-phenyl-1,3,4-oxadiazoles *II*. General Procedure

A solution of 0·0053 mol of amine R—NH_2 (Table I), 0·7 g (0·00177 mol) of sulfochloride *I* and 1 ml of pyridine in 20 ml of benzene (for *IIg* and *IIj* dioxane, for *IIi* nitrobenzene) was stirred at the boiling point for 3—4 h. The mixture was cooled to the room temperature, the solid substance was filtered off and twice washed with 10 ml of ether. Raw product was purified by column chromatography (chloroform–acetone 10 : 1, silica gel) and twice crystallized from the mixture toluene–dioxane. Yields, analytical and spectral data are summarized in Tables I and II.



I



II

	R		R
IIa	C_6H_5	*IIg*	$4\text{-}HOC_6H_4$
IIb	$4\text{-}BrC_6H_4$	*IIh*	$4\text{-}NO_2C_6H_4$
IIc	$4\text{-}CH_3COC_6H_4$	*IIi*	anthraquinon-1-yl
IId	$4\text{-}CH_3C_6H_4$	*IIj*	fluoren-2-yl
IIe	$4\text{-}C_2H_5OC_6H_4$	*IIk*	$4\text{-}(C_6H_5N{=}N)C_6H_4$
IIf	$4\text{-}(CH_3)_2NC_6H_4$		

TABLE I

Elemental analyses and yields of sulfonamides *II*

Compound	Formula M.w.	M.p., °C Yield, %	Calculated/Found			
			% C	% H	% N	% S
IIa	$C_{26}H_{19}N_3O_3S$	281—282	68·86	4·19	9·27	7·08
	453·3	50	68·69	4·40	8·97	7·30
IIb	$C_{26}H_{18}BrN_3O_3S$[a]	242—243	58·66	3·42	7·89	6·01
	532·4	53	58·73	3·60	7·81	6·10
IIc	$C_{28}H_{21}N_3O_4S$	229—230	67·87	4·28	8·48	6·46
	495·5	34	67·81	4·38	8·17	6·47
IId	$C_{27}H_{21}N_3O_3S$	241—242	69·36	4·54	8·99	6·85
	467·5	49	69·31	4·72	9·03	6·85
IIe	$C_{28}H_{23}N_3O_4S$	234—235	68·67	5·39	10·68	6·11
	524·6	57	68·55	5·46	10·62	6·50
IIf	$C_{30}H_{28}N_4O_3S$	200—201	67·73	4·87	11·28	6·45
	496·5	34	67·96	5·05	11·40	6·54
IIg	$C_{26}H_{19}N_3O_4S$	290—291	66·52	4·09	8·95	6·82
	469·5	36	66·58	4·26	8·79	7·28
IIh	$C_{26}H_{18}N_4O_5S$	295—297	62·65	3·65	11·23	6·42
	498·5	45	62·28	3·43	11·40	6·96
IIi	$C_{32}H_{23}N_5O_3S$	235—237	68·93	4·16	12·56	5·74
	557·5	31	69·20	4·41	12·22	5·89
IIj	$C_{34}H_{21}N_3O_5S$	272—273	69·97	3·63	7·20	5·48
	583·5	13	69·52	3·93	7·49	5·81
IIk	$C_{33}H_{22}N_3O_3S$	225—226	73·32	4·11	7·77	5·92
	540·5	37	73·47	4·78	7·12	5·89

[a] Calculated: 15·01% Br, found: 14·99% Br.

TABLE II

Spectral data of sulfonamides *II*

Compound	^{1}H NMR (δ, ppm)		IR, cm^{-1}	
	aromatic H	other H	ν_{as}(SO)	ν_s(SO)
IIa	7·09—8·31	—	1 335 s	1 160 s
IIb	7·28—8·32	—	1 334 s	1 160 s
IIc	7·22—8·31	2·53 s	1 340 s	1 150 s
IId	7·11—8·31	2·22 s	1 340 s	1 156 s
IIe	6·87—8·32	3·97 q; 1·30 t	1 330 s	1 155 s
IIf	6·60—8·32	3·31 q; 1·06 t	1 325 s	1 150 s
IIg	6·74—8·32	9·66 s	1 325 s	1 150 s
IIh	7·56—8·32	—	1 325 s	1 150 s
IIi	7·12—8·32	—	1 340 s	1 160 s
IIj	7·20—8·29	3·88 s	1 332 s	1 160 s
IIk	7·57—8·31	—	1 340 s	1 160 s

REFERENCES

1. Kurfürst A., Nádeník P., Lhoták P., Kuthan J.: Collect. Czech. Chem. Commun., in press.
2. Kurfürst A., Kuthan J., Lhoták P., Nádeník P., Schroth W., Spitzner R.: Collect. Czech. Chem. Commun. *55*, 2722 (1990).

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