The geometric parameters of the title compound, C_{20}H_{16}O_{2}, are in the usual ranges. The central double bond is trans configured. Its two C atoms are slightly twisted out of the naphthyl plane. The dihedral angle between the aromatic groups is 14.09 (8)°.

Comment

Reviews on the bioactivities of varieties of chalcones are given by Dimmock et al. (1999) and Go et al. (2005). Recently, it has been noted that, among many organic compounds reported for their second harmonic generation, chalcone derivatives are known for their excellent blue light transmittance and good crystallizability (Fichou et al., 1988; Goto et al., 1991; Uchida et al., 1998; Zhao et al., 2000; Sarojini et al., 2006). The crystal structures of 3-(4-chlorophenyl)-1-(2-naphthyl)prop-2-enone (Shanmuga Sundara Raj et al., 1997), 1-(2-naphthalenyl)-3-(3-nitrophenyl)-2-propen-1-one (Shanmuga Sundara Raj et al., 1998), 3-(6-methoxy-2-naphthyl)-1-(2-naphthyl)prop-2-en-1-one (Yathirajan, Sarojini, Bindya et al., 2006) and 3-(6-methoxy-2-naphthyl)-1-(2-thienyl)prop-2-en-1-one (Yathirajan, Narayana et al., 2006) have been reported. The crystal structures of 1-(2,4-dichloro-5-fluorophenyl)-3-(3,4-dimethoxyphenyl)prop-2-en-1-one (Yathirajan, Sarojini, Narayana et al., 2006) and (2E)-1-(2,4-dichlorophenyl)-3-[4-(methylsulfanyl)phenyl]prop-2-en-1-one (Butcher et al., 2007) have also been reported. In continuation of our broad programme on chalcones, the present paper reports the crystal structure of a newly synthesized chalcone.

A perspective view of the title compound, (I), is shown in Fig. 1. Bond lengths and angles can be regarded as normal [Cambridge Crystallographic Database, Version 5.28, November 2006 (Allen, 2002); Mogul Version 1.1 (Bruno et al., 2004)]. The carbonyl group is twisted by 21.0 (3)° out of the plane of the phenyl ring. The torsion angle between the carbonyl group and the C atoms of the double bond is −15.9 (4)°. The torsion angle between the the C atoms of the double bond and the adjacent naphthyl residue (C2—C3—C21—C30) is −10.4 (3)°. The two aromatic residues are not coplanar [dihedral angle 14.9 (8)°].

There are non-conventional hydrogen bonds of the type C—H⋯O in the structure that link the molecules into chains.
lying along the $b$ axis. In addition to these intermolecular interactions, intramolecular interactions C3—H3···O1 are also present (Table 1).

### Experimental

5 ml of 40% KOH solution was added to a thoroughly stirred solution of acetophenone (1.2 g, 0.01 mol) and 6-methoxy-2-naphthaldehyde (1.86 g, 0.01 mol) in 25 ml of methanol. The mixture was stirred overnight and filtered. The solid obtained was recrystallized from acetone—toluene (1:1) mixture (m.p. 421–423 K). Analysis for C$_{20}$H$_{16}$O$_2$ found (calculated): C 83.18 (83.31), H 5.50 (5.59)%.

### Crystal data

$\text{C}_{20}\text{H}_{16}\text{O}_2$

$M_r = 288.33$

Orthorhombic, $Pca_2_1$

$a = 14.5275$ (17) Å

$b = 17.0930$ (15) Å

$c = 5.9950$ (5) Å

$V = 1488.7$ (3) Å$^3$

$Z = 4$

$D_x = 1.286$ Mg m$^{-3}$

$\mu = 0.08$ mm$^{-1}$

$\rho_{\text{calc}} = 0.21$ e Å$^{-3}$

$\theta_{\text{max}} = 25.6^\circ$

$\Delta\rho_{\text{max}} = 0.21$ e Å$^{-3}$

Extinction correction: $0.029$ (5)

Mo $K\alpha$ radiation

### Refinement

Refinement on $F^2$

$R[F^2 > 2\sigma(F^2)] = 0.040$

$wR(F^2) = 0.097$

$S = 1.03$

1535 reflections

201 parameters

H-atom parameters constrained

$\Delta\phi = 0.001$

where $P = (F^2 + 2F_e^2)/3$

$\Delta\rho_{\text{min}} = -0.21$ e Å$^{-3}$

Extinction correction: SHELXL97

Extinction coefficient: 0.029 (5)

### References


