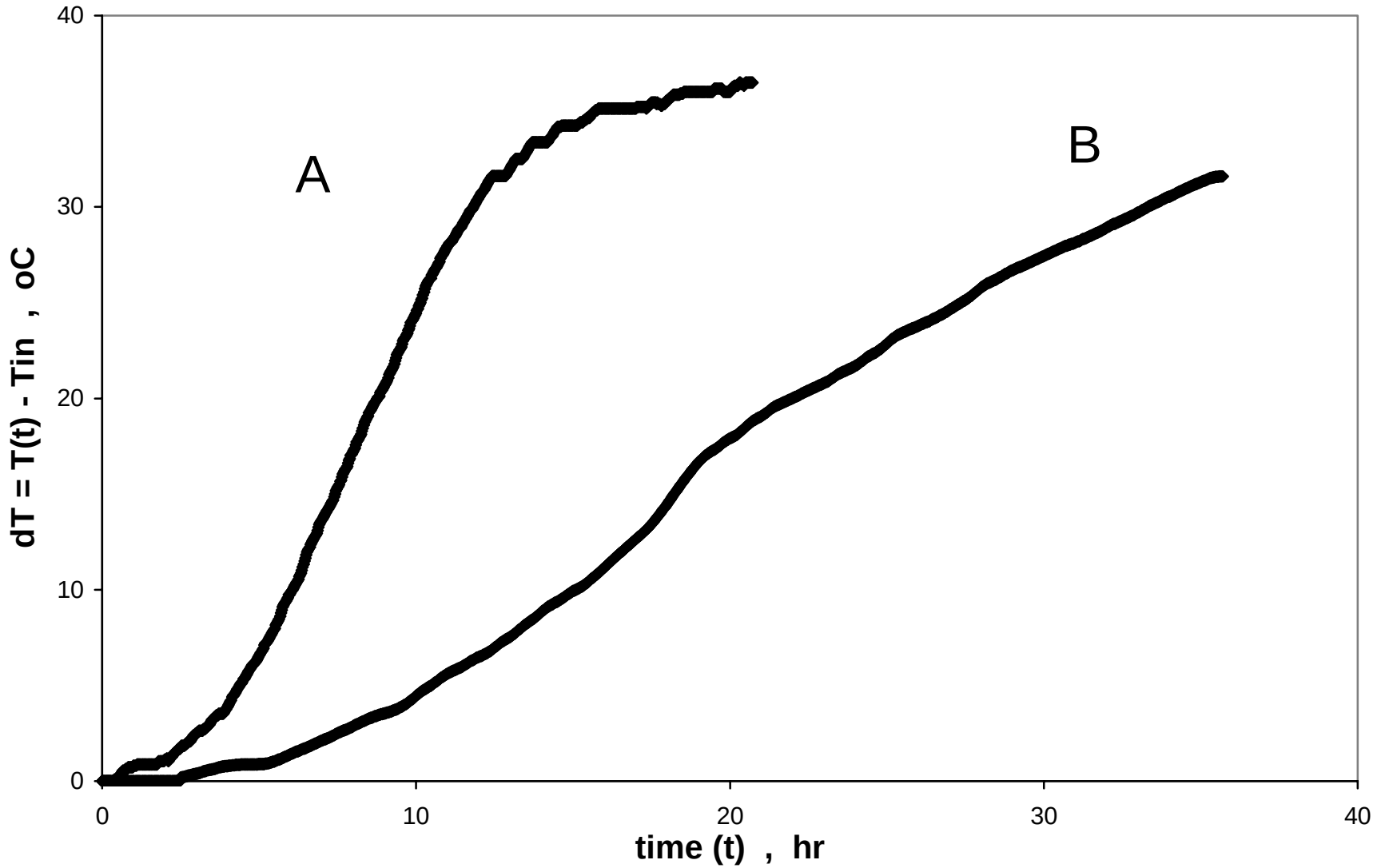
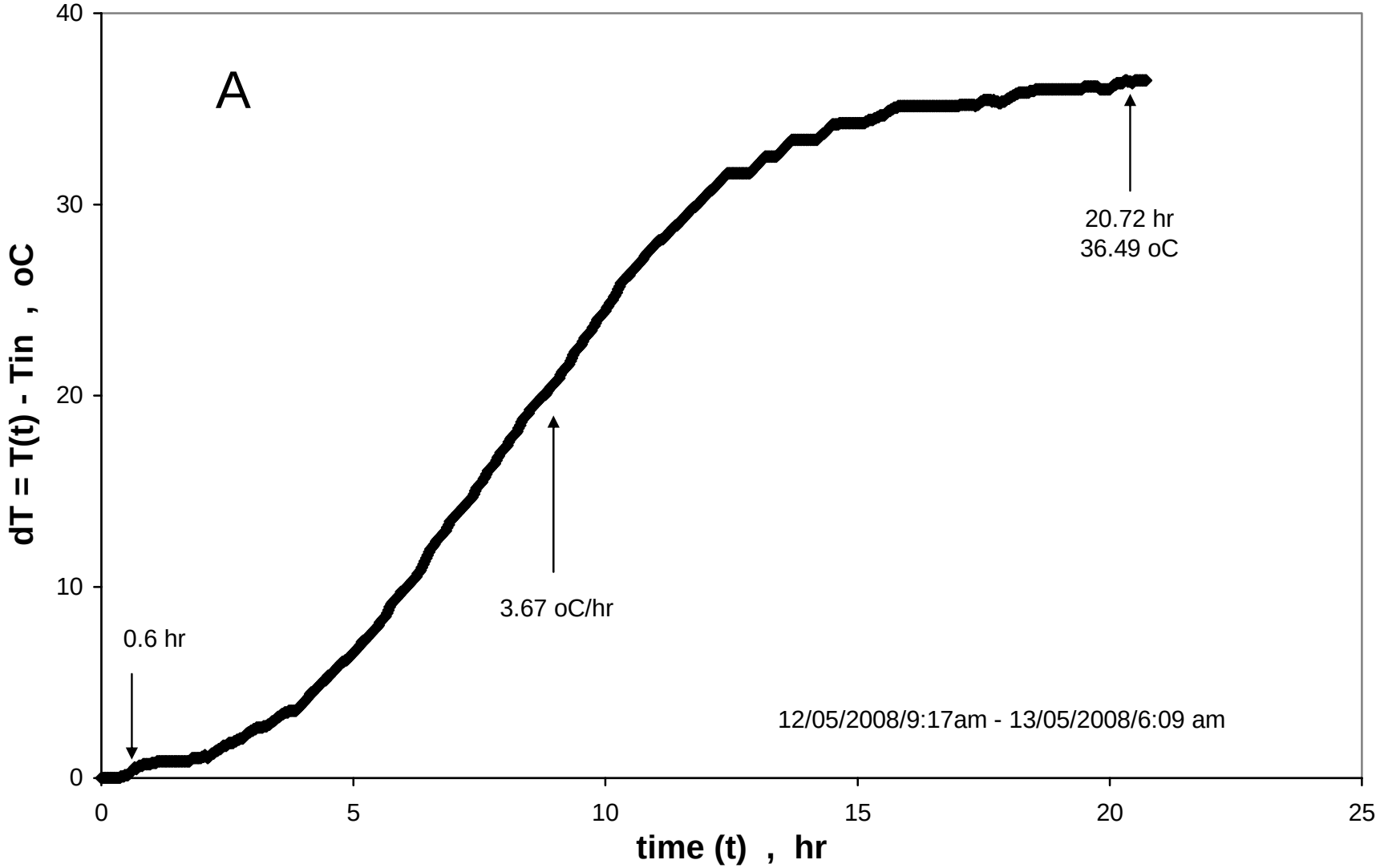
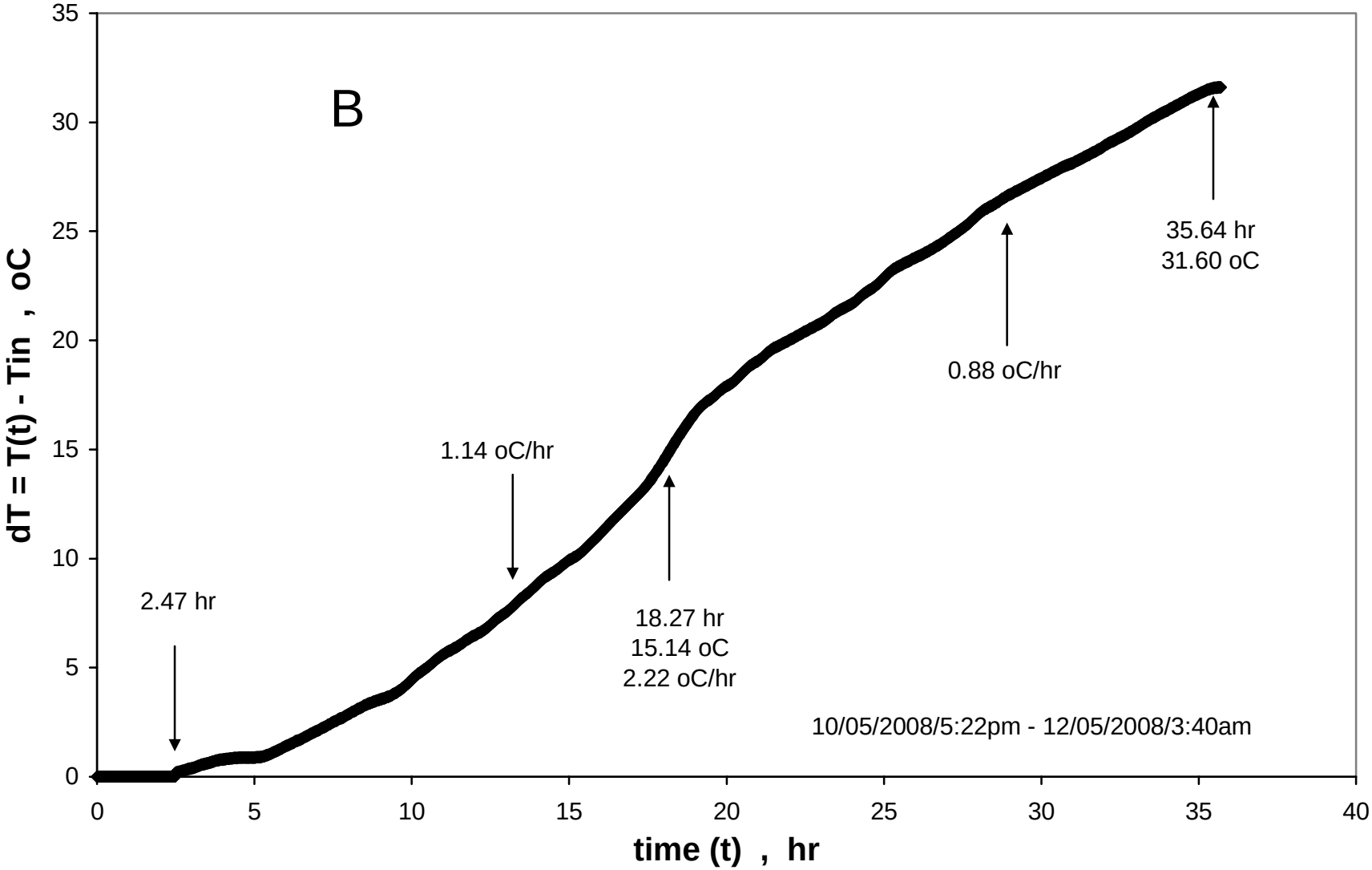
EXPERIMENT 1: Adiabatic Calorimetry (AC) of hydration process in concrete mixtures.
Date: 13/05/2008
Specimen preparation:
1 - all components and AC device are conditioned at least for 5 hr at Tin;
2 - mixing of sand+cement in a plastic pot of 5 l;
3 – addition + mixing of water & start data logging of T(t) in AC;
4 – pouring of mixture in the specimen holder (2 l) & mixing & beating it on a massive basement;
5 – weighting the rest of mixture;
Observations:
1 – mixing is performed manually by using a metal trowel;
2 - mixture B is much more viscous than A and needs longer mixing time;
3 – specimen holder is tightly closed by a plastic lid;
4 – both specimens show finally after AC scan approx. 4 g of condensed water;
5 – sampling period 100 s.

details	A	B
Tin , oC	20.40	20.33
Mass of specimen, g	4342	4336
Components (mass)	- standard sand (BS EN 196-1) (3070 g) - Blue Circle cement (1021 g) - Water (?) (511 g) All components provided by Tony Song (Boral, 9/05/2008)	- Napean river sand (washed-chemically treated-washed-dried at constant mass) (3070 g) (Bunnings) - Cement (Building Product Supplies-Melbourne (1021 g) (Bunnings) - Tap water (511 g)
Mixing time (minutes)	4	8


40
30
20
10
0
0
10
20
30
40
A
B
dT = T(t) - Tin , oC
time (t) , hr


A
40
30
20
10
0
0
5
10
15
20
25
dT = T(t) - Tin , oC
time (t) , hr
20.72 hr
36.49 oC
3.67 oC/hr
0.6 hr
12/05/2008/9:17am - 13/05/2008/6:09 am


B
dT = T(t) - Tin , oC
time (t) , hr
0
5
10
15
20
25
30
35
40
2.47 hr
1.14 oC/hr
18.27 hr
15.14 oC
2.22 oC/hr
0.88 oC/hr
35.64 hr
31.60 oC
10/05/2008/5:22pm - 12/05/2008/3:40am