***Supporting Information***

**Investigation of the effects of different hydrophilic and hydrophobic comonomers on the volume phase transition temperatures and thermal properties of N-isopropylacrylamide based hydrogels**

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**S1**. The NIPA/AA/NTBA hydrogel

**S2**. The NIPA/MMA/NTBA hydrogel

**S3**. The NIPA/MMA/AA hydrogel

**S4**. Dependence of swelling ratio on temperature in pure water for P(NIPA) hydrogel

**S5**. Dependence of swelling ratio on temperature in pure water for NIPA(50)/MMA(40)/AA(10), NIPA(50)/AA(40)/NTBA(10), NIPA(50)/MMA(10)/NTBA(40) hidrogels

**S6**. Dependence of swelling ratio on temperature in pure water for NIPA(50)/MMA(10)/AA(40), NIPA(50)/AA(40)/NTBA(10), NIPA(50)/MMA(10)/NTBA(40) hidrogels

**S7**. Dependence of swelling ratio on temperature in pure water for NIPA(60)/AA(20)/NTBA(20), NIPA(60)/MMA(20)/AA(20), NIPA(60)/MMA(20)/NTBA(20) hidrogels

**S8**. Dependence of swelling ratio on temperature in pure water for NIPA(60)/MMA(10)/AA(30), NIPA(60)/AA(30)/NTBA(10), NIPA(60)/MMA(10)/NTBA(30) hidrogels

**S9**. Dependence of swelling ratio on temperature in pure water for NIPA(60)/MMA(30)/AA(10), NIPA(60)/MMA(30)/NTBA(10), NIPA(60)/AA(10)/NTBA(30) hidrogels

**S10**. Dependence of swelling ratio on temperature in pure water NIPA(80)/AA(10)/NTBA(10), NIPA(80)/MMA(10)/AA(10), NIPA(80)/MMA(10)/NTBA(40) hidrogels

**S11**. Dependence of swelling ratio on temperature in pure water for NIPA(80)/MMA(5)/NTBA(15), NIPA(80)/MMA(5)/AA(15) hidrogels

**S12**. Dependence of swelling ratio on temperature in pure water for NIPA(80)/MMA(15)/AA(5), NIPA(80)/MMA(15)/NTBA(5) hidrogels

**S13**.Dependence of swelling ratio on temperature in pure water for

NIPA(80)/AA(5)/NTBA(15), NIPA(80)/AA(15)/NTBA(5) hidrogels

**S.14**. DSC thermogram of P(NIPA) hydrogel

**S.15**. DSC thermograms of a: (NIPAAm%80/MMA%15/NTBA%5),

b: (NIPAAm%80/NTBA%15/AA%5)P(NIPA) and

c: (NIPAAm%80/AA%5/NTBA%15) hydrogels

**S.16**. DSC thermograms of d: (NIPAAm%50/AA%40/MMA%10) and e: (NIPAAm%50/AA%40/NTBA%10) hydrogels

**S.17**. DTG thermograms of the (NIPA%80/MMA%15/NTBA%5) and b:(NIPA%80/MMA%15/AA%5) hydrogels. Scan was run at 10 oC/min under nitrogen atmosphere.

**S.18**. DTG thermograms of the b:(NIPA%80/MMA%15/AA%5) and c:(NIPA%80/AA%5/NTBA%15) hydrogels. Scan was run at 10 oC/min under nitrogen atmosphere.

**S.19**. DTG thermograms of the d:(NIPA%50AA%40/MMA%10/) and e:(NIPA%50/AA%40/NTBA%10) hydrogels. Scan was run at 10 oC/min under nitrogen atmosphere.



**SCHEME S1**: The NIPA/AA/NTBA hydrogel



**SCHEME S2**: The NIPA/MMA/NTBA hydrogel



**SCHEME S3**: The NIPA/MMA/AA hydrogel

**FIGURE S4**: Dependence of swelling ratio on temperature in pure water for P(NIPA) hydrogel.

**FIGURE S5**: Dependence of swelling ratio on temperature in pure water for NIPA(50)/MMA(40)/AA(10), NIPA(50)/AA(40)/NTBA(10), NIPA(50)/MMA(10)/NTBA(40) hidrogels

**FIGURE S6**:Dependence of swelling ratio on temperature in pure water for NIPA(50)/MMA(10)/AA(40), NIPA(50)/AA(40)/NTBA(10), NIPA(50)/MMA(10)/NTBA(40) hidrogels

**FIGURE S7**: Dependence of swelling ratio on temperature in pure water for NIPA(60)/AA(20)/NTBA(20), NIPA(60)/MMA(20)/AA(20), NIPA(60)/MMA(20)/NTBA(20) hidrogels

**FIGURE S8**: Dependence of swelling ratio on temperature in pure water for NIPA(60)/MMA(10)/AA(30), NIPA(60)/AA(30)/NTBA(10), NIPA(60)/MMA(10)/NTBA(30) hidrogels

**FIGURE S9**: Dependence of swelling ratio on temperature in pure water for NIPA(60)/MMA(30)/AA(10),NIPA(60)/MMA(30)/NTBA(10), NIPA(60)/AA(10)/NTBA(30) hidrogels

**FIGURE S10**: Dependence of swelling ratio on temperature in pure water forNIPA(80)/AA(10)/NTBA(10),NIPA(80)/MMA(10)/AA(10), NIPA(80)/MMA(10)/NTBA(40) hidrogels

**FIGURE S11**: Dependence of swelling ratio on temperature in pure water for NIPA(80)/MMA(5)/NTBA(15), NIPA(80)/MMA(5)/AA(15) hidrogels

**FIGURE S12**: Dependence of swelling ratio on temperature in pure water for NIPA(80)/MMA(15)/AA(5), NIPA(80)/MMA(15)/NTBA(5) hidrogels

**FIGURE S13**: Dependence of swelling ratio on temperature in pure water for NIPA(80)/AA(5)/NTBA(15),NIPA(80)/AA(15)/NTBA(5) hidrogels



**FIGURE S14**: DSC thermogram of P(NIPA) hydrogel



**FIGURE S15**: DSC thermograms of a: (NIPAAm%80/MMA%15/NTBA%5),

b: (NIPAAm%80/NTBA%15/AA%5)P(NIPA) and

c: (NIPAAm%80/AA%5/NTBA%15) hydrogels

 

**FIGURE S16**: DSC thermograms of d: (NIPAAm%50/AA%40/MMA%10) and

e: (NIPAAm%50/AA%40/NTBA%10) hydrogels

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**FIGURE S17**: DTG thermograms of the (NIPA%80/MMA%15/NTBA%5) and b:(NIPA%80/MMA%15/AA%5) hydrogels. Scan was run at 10 oC/min under nitrogen atmosphere.

 

**FIGURE S18**: DTG thermograms of the b:(NIPA%80/MMA%15/AA%5) and c:(NIPA%80/AA%5/NTBA%15) hydrogels. Scan was run at 10 oC/min under nitrogen atmosphere.



**FIGURE S19**: DTG thermograms of the d:(NIPA%50AA%40/MMA%10/) and e:(NIPA%50/AA%40/NTBA%10) hydrogels. Scan was run at 10 oC/min under nitrogen atmosphere.