

Crystal structure, Thermodynamics, and Crystallization of Bio-based Polyamide 56 salt

Pengpeng Yang^a, Xiaoqiang Peng^a, Sen Wang^a, Dong Li^b, Ming Li^a, Pengfei Jiao^c, Wei Zhuang^a,
Jinglan Wu^a, Qingshi Wen^{d*}, and Hanjie Ying^{a*}

^aNational Engineering Technique Research Center for Biotechnology, State Key Laboratory of Materials-Oriented Chemical Engineering, College of Biotechnology and Pharmaceutical Engineering, and Jiangsu Synergetic Innovation Center for Advanced Bio-Manufacture, Nanjing Tech University, Nanjing 210009, China

^bQingdao Product Quality Supervision and Testing Research Institute, Qingdao, China

^cSchool of Life Science and Technology, Nanyang Normal University, Nanyang, China

^dIndustrial Biotechnology Institute of Jiangsu Industrial Technology Research Institute, Nanjing, China

Support information

Table S1. The parameters of modified Apelblat model in the correlation of solubility of nylon 56 salt with temperature.

x_2	A	B	C	R^2
0, pure water	-87.43±42.05	1813.11±2677.82	13.87±6.24	0.998
0.382	15.43±218.26	-3783.47±9584.70	-0.96±33.53	0.991
0.553	12.33±147.94	-4771.71±6345.63	0.06±22.87	0.998
0.650	-2.02±616.24	-6013.86±26158.32	3.19±88.36	0.994
0.712	3.64±657.55	-9738.57±27154.66	4.21±93.27	0.998
1.0, pure ethanol	31.37±108.67	-3457.02±5341.96	-4.94±16.21	0.993

Tips: x_2 stands for the molar fraction of ethanol in ethanol-water binary solvent. The alphabet "A, B, C" refer to the parameters of modified Apelblat model.

Table S2. The parameters of van't Hoff equation for the correlation of $\ln x_1$ and $1/T$ in pure water and different molar ratio of ethanol-water binary solvent.

x_2	intercept	slope	R^2
pure water	5.24±0.22	-2248.93±65.80	0.995
0.382	9.81±0.67	-3736.07±198.47	0.986
0.553	13.62±0.63	-5051.79±187.25	0.992
0.65	19.04±0.69	-6876.19±204.89	0.996
0.712	34.85±1.20	-11900.75±358.35	0.996

Tips: x_2 stands for the molar fraction of ethanol in ethanol-water binary solvent. The alphabet "A, B, C" refer to the parameters of modified Apelblat model.

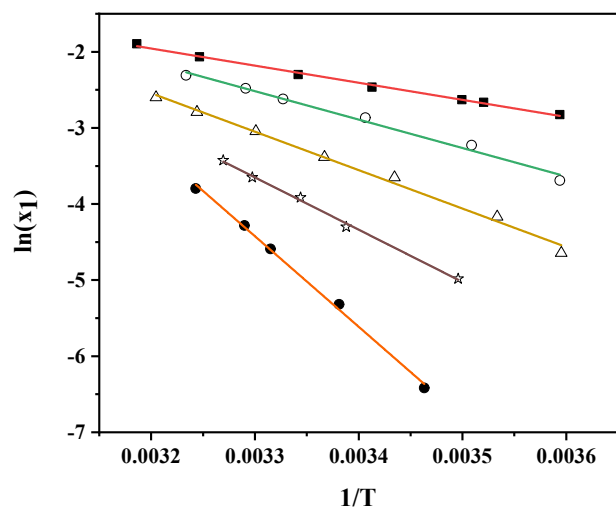


Figure S1. Temperature dependence for solubility of nylon 56 salt (x_1) in different binary solvent mixtures correlated by van't Hoff equation, the symbols “■、○、△、☆、●” stand for the ethanol molar ratio $x_2=0$ (pure water), 0.382, 0.553, 0.650, 0.712, respectively.