

REFERENCES

- Akira, J., Wada, M., Kuga, S., and Okano, T. (1999) Influence of surface charge on viscosity behavior of cellulose microcrystal suspension. *Journal of Wood Science*, 45(3), 258–261.
- Akiyama, D., Okazaki, M., and Hirabayashi, K. (1993) Method for the preparation of a polymer with a high water absorption capacity containing sericin. *Journal of Sericultural Science of Japan*, 62(5), 392–396.
- Azizi Samir, M.A.S., Alloin, F., Dufrene, A. (2005) Review of Recent Research into Cellulosic Whiskers, Their Properties and Their Application in Nanocomposite Field. *Biomacromolecules*, 6(2), 612–626.
- Azizi, S. M., Alloin, F., Paillet, M., and Dufresne, A. (2004) Tangling effect in fibrillated cellulose reinforced nanocomposites. *Macromolecules*, 37, 4313–4316.
- Capadona, J.R., Shanmuganathan, K., Tritschuh, S., Seidel, S., Rowan, S.J., and Weder, C. (2009) Polymer nanocomposites with nanowhiskers Isolated from microcrystalline Cellulose. *Biomacromolecules*, 10(4), 712–716.
- Chen, W., Yu, H., Liu, Y., Chen, P., Zhang, M., Hai, Y. (2011) Individualization of cellulose nanofibers from wood using high-intensity ultrasonication combined with chemical pretreatments. *Carbohydrate Polymers*. 83, 1804–1811.
- Cherian, B.M., Pothan, L.A., Nguyen-Guyen, T., Mennig, G., Kottaisamy, M., and Thomas, S. (2008) A novel method for the synthesis of cellulose nanofibril whiskers from banana fibers and characterization. *Journal of Agricultural and Food Chemistry*, 56, 5617–5627.
- Cho, K.Y., Moon, J.Y., Lee, Y.W., Lee, K.G., Yeo, J.H., Kweon, H.Y., Kim, K.H., and Cho, C.S. (2003) Preparation of self-assembled silk sericin nanoparticles. *Biological Macromolecules*, 32(1–2), 36–42.
- Choi, Y.S., Lee, S.B., Hong, S.R., Lee, Y.M., Song, K.W., and Park, M.H. (2001) Studies on gelatin-based sponges. Part III: A comparative study of cross-linked gelatin/alginate, gelatin/hyaluronate and chitosan/hyaluronate sponges and their application as a wound dressing in full-thickness skin

- defect of rat. *Journal of Materials Science:Materials in medicine*, 12, 67–73.
- Dash, R., Acharya, C., Bindu, P.C. and Kundu, S.C. (2007) Antioxidant potential of silk protein sericin against hydrogen peroxide-induced oxidative stress in skin fibroblasts. *BMB reports*, 236–241.
- de Moris Teixeira, E., Pasquini, D., Curvelo, A.A.S., Corradini, E., Belgacem, M.N., and Dufrense, A. (2009) Cassava bagasse cellulose nanofibrils reinforced thermoplastic cassava starch. *Carbohydrate Polymers*, 78(3), 422–431.
- de Morais Teixeira, E., Correa, A.C., Manzoli, A., de Lima Leite, F., de Oliveira, C.R., and Mattoso, L.H.C. (2010) Cellulose nanofibers from white and naturally colored cotton fibers. *Cellulose*, 17, 595–606.
- de Rodriguez, N. L. G., Thielemans, W., and Dufresne, A. (2006) Sisal cellulose whiskers reinforced polyvinyl acetate nanocomposites. *Cellulose*, 13(3), 261–270.
- Dufresne, A., and Vignon, M. R. (1998) Improvement of starch film performances using cellulose microfibrils. *Macromolecules*, 31, 2693–2696.
- Elanthikkal, S., Gopalakrishnapanicker, U., Varghese, S., and Guthrie, J.T. (2010) Cellulose microfibres produced from banana plant wastes: Isolation and characterization. *Carbohydrate Polymers*, 80(3), 852–859.
- Elazzouzi-Hafraous. S., Nishiyama, Y., Putuax, J.L., Heux, L., Dubreuil, F., and Rochas, C. (2008) The shape and size distribution of crystalline nanoparticles prepared by acid hydrolysis of native cellulose. *Biomacromolecules*, 9(1), 57–65.
- Fan, Y., Saito, T., and Isogai, A. (2008) Preparation of chitin nanofibers from squid pen –chitin by simple mechanical treatment under acid conditions. *Biomacromolecules*, 9, 1919–1923.
- Favier, V., Chanzy, H., and Cavaillé, J.Y. (1995) Polymer nanocomposites reinforced by cellulose whiskers. *Macromolecules*, 28(18), 6365–6367.
- Garcia de Rodriguez, N.L., Thielemans, W., and Dufrense, A. (2006) Sisal cellulose whiskers reinforced polyvinyl acetate nanocomposites. *Cellulose*, 13(3), 261–270.

- Goosen, M.F.A. (1997) Applications of chitin, chitosan. Pennsylvania: Technomic Publishing.
- Gupta, A., Singh, R.L., and Raghbir, R. (2002) Antioxidant status during cutaneous wound healing in immunocompromised rats. Molecular and Cellular Biochemistry, 241, 1–7.
- Gulrajani, M.L. (1988) Degumming of silk; in silk dyeing printing and finishing. Department of Textile Technology Indian Institute of Technology, New Delhi, 63–95.
- Hatakeyama H. (1996) Biodegradable sericin-containing polyurethane and its production. Japan Patent 08-012738A.
- Hinrichs, L.J., Lommen, E.J., Wildevuur, C.R.H., and Feijen, J. (1992) Fabrication and characterization of an asymmetric polyurethane membrane for use as a wound dressing. Journal of Applied Biomaterials and Biomechanics, 3, 287–303.
- Khor, E., and Lim, L.Y. (2003) Implantable applications of chitin and chitosan. Biomaterials, 24(13), 2339–2349.
- Klemm, D., Heublein, B., Fink, H.P., and Bohn, A. (2005) Cellulose: fascinating biopolymer and sustainable raw material. Angewandte Chemie International Edition, 44, 2–37.
- Kojima, K., Okamoto, Y., Miyatake, K., Kitamura, Y., Minami, S. (1998) Collagen typing of granulation tissue induced by chitin and chitosan. Carbohydrate Polymers, 37, 109–113.
- Kundu, S.C., Dash, B.C., Dash, R., and Kaplan, D.L. (2008) Natural protective glue protein, sericin bioengineered by silkworms: Potential for biomedical and biotechnological applications. Progress in Polymer Science, 33(10), 998–1012.
- Li, R., Fei, J., Cai, Y., Li, Y., Feng, J., and Yao, J. (2009) Cellulose whiskers extracted from mulberry: a novel biomass production. Carbohydrate Polymers, 76(1), 94–99.
- Lu, Y., Weng, L., and Zhang, L. (2004) Morphology and properties of soy protein isolate thermoplastics reinforced with chitin whiskers. Biomacromolecules, 5(3), 1046–1051.

- Mandal, B.B., Priya, A.S., and Kunda, S.C. (2009) Novel silk sericin/gelatin 3-D scaffolds and 2-D films: Fabrication and characterization for potential tissue engineering applications. *Acta Biomaterialia*, 5(8), 3007–3020.
- Marchessault, R. H., Morehead, F. F., and Koch, M. J. (1961) Some hydrodynamic properties of neutral suspensions of cellulose crystallites as related to size and shape. *Journal of Colloid Science*, 16, 327–344.
- Marchessault, R. H., Morehead, F.F., and Walter, N.M. (1959) Liquid Crystal Systems from Fibrillar Polysaccharides. *Nature*, 184, 632 – 633.
- Mathew, A.P., and Dufrene, A. (2002) Morphology investigation of nanocomposites from sorbital plasticized starch and tunicin whiskers. *Biomacromolecules*, 3(3), 609–617.
- Mathur, N.K., and Narang, C.K. (1990) Chitin and chitosan, versatile polysaccharides from marine animals. *Journal of Chemical Education*, 67(11), 938.
- Minami, S., Okamoto, Y., Miyatake, K., Matsuhashi, A., Kitamura, Y., Tanigawa, T., Tanaka, Y., and Sbigemasa, Y. (1996) Chitin induces type IV collagen and implanted non-woven fabric of elastic fiber in polyester. *Carbohydrate Polymers*, 29, 295–299.
- Morin, A., and Dufresne, A. (2002) Nanocomposites of chitin whiskers from *Riftia* tubes and poly(caprolactone). *Macromolecules*, 35(6), 2190–2199.
- Moran, J., Alvarez, V., Cyras, V., and Vazquez, A. (2008) Extraction of cellulose and preparation of nanocellulose from sisal fibers. *Cellulose*, 15(1), 149–159.
- Muzzarelli, R.A.A. (1985) Encyclopedia of Polymer Science and Engineering. (M. Bikales, Ed.), *John Wiley, New York*, 3, 430.
- Muzzarelli, R.A.A., and Muzzarelli, C. (2005) Chitin nanofibrils. *A book chapter Chitin and Chitosan: Research Opportunities and Challenges*. Edited by Dutta, P.K., *New Age International, New Delhi, India*.

- Nagura, M., Ohnishi, R., Gitoh, Y., and Ohkoshi, Y. (2001) Structures and physical properties of cross-linked sericin membranes. *Journal of Insect Biotechnology and Sericology*, 70(2), 149–153.
- Nair, K.G., and Dufresne, A. (2003) Crab shell chitin whisker reinforced natural rubber nanocomposites 1. Processing and swelling behavior. *Biomacromolecules*, 4(3), 657–665.
- Nair, K.G., and Dufresne, A. (2003) Crab shell chitin whisker reinforced natural rubber nanocomposites 2. Mechanical behavior. *Biomacromolecules*, 4(3), 666–674.
- Nair, K.G., and Dufresne, A. (2003) Crab shell chitin whisker reinforced natural rubber nanocomposites 3. Effect of chemical modification of chitin whiskers. *Biomacromolecules*, 4(6), 1835–1842.
- Nishida, A., Yamada, M., Kanazawa, T., Takashima, Y., Ouchi, K., and Okada, H. (2011) Sustained-release of protein from biodegradable sericin film, gel and sponge. *International Journal of Pharmaceutics*, doi:10.1016/j.ijpharm.2011.01.006.
- Nyquist, R.A., Peters, T. L., and Budde, P. B. (1978) Infrared and raman correlations of arylaldehyde azines : asymmetric and symmetric (C=N–)₂ stretching. *Spectrochimica Acta*, 34A, 503–504.
- Oksman, K., Mathew, A.P., Bondeson, D., and Kvien, I. (2006) Manufacturing process of cellulose whiskers/polylactic acid nanocomposites. *Composites Science and Technology*, 66(15), 2776–2784.
- Ouajai, S. and Shanks, R.A. (2005) Composition, structure and thermal degradation of hemp cellulose after chemical treatments. *Polymer Degradation and Stability*. 89, 327–335.
- Paillet, M., and Dufresne, A. (2001) Chitin whisker reinforced thermoplastic nanocomposites. *Macromolecules*, 34(19), 6527–6530.
- Pandey, J.K., Lee, J.W., Chu, W.S., Kim, C.S., and Ahn, S.H. (2008) Cellulose nano whiskers from grass of Korea. *Macromolecular Research*, 16(5), 396–398.

- Pandey, J.K., Chu, W.S., Kim, C.S., Lee, C.S., and Ahn, S.H. (2009) Bio–nano reinforcement of environmentally degradable polymer matrix by cellulose whiskers from grass. *Composites Part B: Engineering*, 40(7), 676–680.
- Paul, S.A., Piasta, D., Spange, S., Pothan, L.A., Thomas, S., and Bellmann, C. (2008) Solvatochromic and electrokinetic studies of banana fibrils prepared from steam–exploded banana fiber. *Biomacromolecules*, 9, 1802–1810.
- Peterson, L., Kvien, I., and Oksman, K. (2007) Structure and thermal properties of poly(lactic acid)/cellulose whiskers nanocomposite materials. *Composites Science and Technology*, 67(11–12), 2535–2544.
- Purna, S.K., Babu, M. (2000) Collagen based dressings—a review. *Burns*, 26, 54–62.
- Rinaudo, M. (2006) Chitin and chitosan: Properties and applications. *Progress in Polymer Science*, 31(7), 603–632.
- Roman, M., and Winter, W.T. (2004) Effect of sulfate groups from sulfuric acid hydrolysis on the thermal degradation behavior of bacterial cellulose. *Biomacromolecules*, 5, 1671–1677.
- Roohani, M., Habibi, Y., Belgacem, N.M., Ebrahim, G., Karimi, A.N., and Dufrene, A. (2008) Cellulose whiskers reinforced polyvinyl alcohol copolymers nanocomposites. *European Polymer journal*, 44(8), 2489–2498.
- Sain, M., and Panthapulakkal, S. (2006) Bioprocess preparation of wheat straw fibers and their characterization. *Industrial Crops and Products*, 23, 1–8.
- Sajomsang, W., and Gonil, P. (2010) Preparation and characterization of α -chitin from cicada sloughs. *Materials Science and Engineering*, 30, 357–363.
- Sarovart, S., Sudatis, B., Meesilpa, P., Grady, B.P., and Magaraphan, R. (2003) The use of sericin as an antioxidant and antimicrobial for polluted air treatment. *Reviews on Advanced Materials Science*, 5, 193–198.
- Shuangyun, L., Wenjuan, G., and Gu, H. Y. (2008) Construction, application and biosafety of silver nanocrystalline chitosan wound dressing. *Burns*, 34, 623–628.
- Sun, R. C., Tomkinson, J., Wang, Y. X., and Xiao, B. (2000) Physico–chemical and structural characterization of hemicelluloses from wheat straw by alkaline peroxide extraction. *Polymer*, 41(7), 2647–2656.

- Terada, S., Sasaki, M., Yanagihara, K., and Yamada, H. (2005) Preparation of silk protein sericin as mitogenic factor for better mammalian cell culture. *Journal of Bioscience and Bioengineering*, 100(6), 667–671.
- Tsubouchi, K., Igarashi, Y., Takasu, Y., and Yamada, H. (2005) Sericin enhanced attachment of cultured human skin fibroblasts. *Bioscience, Biotechnology, and Biochemistry*, 69(2), 403–405.
- Usami, Y., Okamoto, Y., Takayama, T., Shigemasa, Y., and Minami, S. (1998) Chitin and chitosan stimulate canine polymorphonuclear cells to release leukotriene B4 and prostaglandin E2. *Journal of Biomedical Materials Research*, 42(4), 517–522.
- Visakh, P.M., and Thomas, S. (2010) Preparation of bionanomaterials and their polymer nanocomposites from waste and biomass. *Waste Biomass Valor*, 1(1), 121–134.
- Wattanaphanit, A., Supaphol, P., Tamura, H., Tokura, S., and Rujiravanit, R. (2008) Fabrication, structure, and properties of chitin whisker-reinforced alginate nanocomposite fibers. *Journal of Applied Polymer Science*, 110(2), 890–899.
- Wang, N., Ding, E., and Cheng, R. (2007) Thermal degradation behaviors of spherical cellulose nanocrystals with sulfate groups. *Polymer*, 48, 3486–3493.
- Wang, W.M., Cai, Z.H., Yu, J.Y., and Xia, Z.P. (2009) Changes in composition, structure, and properties of jute fibers after chemical treatments. *Fibers and Polymers*, 10(6), 776–780.
- Wongpanit, P., Sanchavanakit, N., Pavasant, P., Bunapresert, T., Tabata, Y., and Rujiravanit, R. (2007) Preparation and characterization of chitin whisker-reinforced silk fibroin nanocomposite sponges. *European Polymer Journal*, 43(10), 4123–4135.
- Yamada, M. (1978) Amino acid composition of the sericin extracted from cocoon of the mulberry wild silkworm, *Bombyx mori* and its species specificity. *Journal of Sericulture Science Japan*, 47, 108–112.
- Yao, S.J. (1999) Sulfation kinetics in the preparation of cellulose sulphate. *Chinese Journal of Chemical Engineering*, 7, 47–55.

- Zhang, Y.Q. (2002) Applications of natural silk protein sericin in biomaterials. *Biotechnology Advances*, 20(2), 91–100.
- Zhang, Y.Q., Ma, Y., Xia, Y.Y., Shen, W.D., Mao, J.P., and Xue, R.Y. (2006) Silk sericin–insulin bioconjugates: Synthesis, characterization and biological activity. *Journal of Controlled Release*, 115, 307–315.
- Zuluaga, R., Putaux, J.L., Restrepo, A., Mondragon, I., and Gañán, P. (2007) Cellulose microfibrils from banana farming residues: isolation and characterization. *Cellulose*, 14(6), 585–592.
- Zuluaga, R., Putaux, J.L., Cruz, J., Vélez, J., Mondragon, I., and Gañán, P. (2009) Cellulose microfibrils from banana rachis: Effect of alkaline treatments on structural and morphological features. *Carbohydrate Polymers*, 76(1), 51–59.

APPENDICES

Appendix A Water Absorption Properties

Table A1 Water absorption properties

Composition CLWK:CTWK:SRC	W ₀ (mg)	W _S (mg)	Water absorption (%)	Average	SD
100:0:0	6.40	147.20	2200.000	1877.709	252.961
	6.80	130.40	1817.647		
	8.20	164.40	1904.878		
	7.70	130.00	1588.312		
100:0:25	9.90	294.80	2877.778	2804.745	215.804
	8.20	243.80	2873.171		
	8.90	274.00	2978.652		
	11.30	292.60	2489.381		
100:0:50	12.20	381.50	3027.049	2891.221	216.487
	13.40	394.80	2846.269		
	10.10	273.20	2604.950		
	12.70	404.70	3086.614		
100:0:100	16.20	506.30	3025.309	3052.041	118.630
	14.40	448.40	3013.889		
	16.90	514.90	2946.746		
	16.20	538.20	3222.222		
75:25:0	7.90	91.10	1053.165	1052.954	13.228
	8.00	92.70	1058.750		
	8.10	91.90	1034.568		
	7.50	87.40	1065.333		
75:25:25	9.50	231.20	2333.684	2457.100	115.530
	10.10	274.00	2612.871		
	9.30	236.00	2437.634		
	9.50	241.70	2444.211		
75:25:50	11.20	352.60	3048.214	2751.417	244.740
	12.80	348.80	2625.000		
	14.00	362.80	2491.429		
	11.70	344.10	2841.026		

Composition CLWK:CTWK:SRC	W ₀ (mg)	W _S (mg)	Water absorption (%)	Average	SD
75:25:100	18.40	518.30	2716.848	2782.141	80.196
	18.50	522.70	2725.405		
	16.80	486.60	2796.429		
	16.80	502.30	2889.881		
50:50:0	7.00	83.00	1085.714	1303.219	145.734
	6.80	99.40	1361.765		
	7.20	107.70	1395.833		
	6.90	101.40	1369.565		
50:50:25	9.90	253.10	2456.566	2490.092	77.370
	14.00	366.40	2517.143		
	10.00	268.30	2583.000		
	8.20	205.30	2403.659		
50:50:50	14.70	384.90	2518.367	2631.889	215.137
	13.40	357.00	2564.179		
	12.60	384.50	2951.587		
	15.20	394.20	2493.421		
50:50:100	16.20	400.90	2374.691	2465.356	104.979
	17.70	450.00	2442.373		
	17.40	472.70	2616.667		
	13.00	328.60	2427.692		
25:75:0	8.60	146.70	1605.814	1580.405	185.154
	8.60	124.10	1343.023		
	6.90	115.80	1578.261		
	7.30	138.30	1794.521		
25:75:25	10.80	264.30	2347.222	2520.921	117.131
	10.80	291.40	2598.148		
	10.80	286.80	2555.556		
	11.60	311.20	2582.759		
25:75:50	13.10	348.70	2561.832	2594.381	60.724
	11.90	321.80	2604.202		
	12.50	346.90	2675.200		
	12.40	326.90	2536.290		
25:75:100	17.00	373.80	2098.824	2104.712	96.480
	18.50	384.10	1976.216		
	17.80	410.50	2206.180		
	19.40	434.10	2137.629		

Composition CLWK:CTWK:SRC	W ₀ (mg)	W _S (mg)	Water absorption (%)	Average	SD
0:100:25	12.20	294.50	2313.934	2494.872	202.103
	11.60	303.90	2519.828		
	11.00	315.60	2769.091		
	10.70	265.00	2376.636		
0:100:50	13.70	360.40	2530.657	2557.426	52.605
	13.00	346.30	2563.846		
	14.20	387.40	2628.169		
	12.80	333.70	2507.031		
0:100:100	16.00	398.20	2388.750	2170.903	160.964
	18.00	401.70	2131.667		
	18.20	411.60	2161.538		
	18.10	380.40	2001.657		

Appendix B Sericin Releasing

Table B1 Standard calibration of standard protein by BCA assay

Protein concentration ($\mu\text{g/ml}$)	Absorbance at 562nm	Average	SD
0	0.1733	0.1695	0.0034
	0.1681		
	0.1670		
25	0.1865	0.1845	0.0035
	0.1865		
	0.1804		
125	0.2737	0.2622	0.0119
	0.2500		
	0.2630		
250	0.3394	0.3472	0.0106
	0.3592		
	0.3429		
500	0.5266	0.5396	0.0175
	0.5595		
	0.5327		
750	0.6795	0.6909	0.0099
	0.6961		
	0.6972		
1000	0.8436	0.8783	0.0309
	0.9027		
	0.8886		
1500	1.1764	1.1867	0.0163
	1.1783		
	1.2055		
2000	1.5060	1.5063	0.0226
	1.5290		
	1.4838		

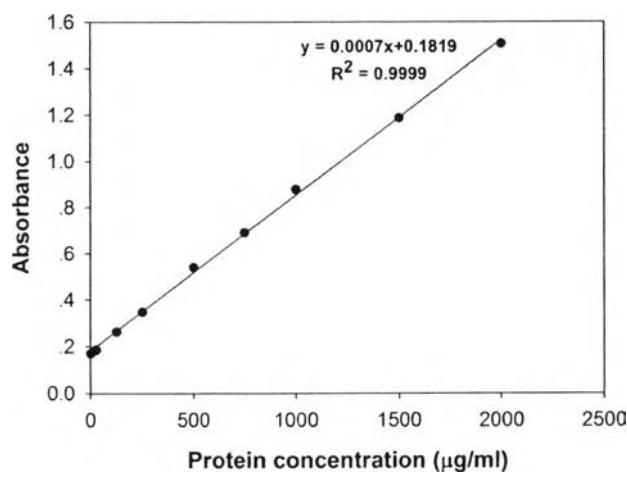


Figure B1 Standard calibration curve.

Table B2 Releasing of sericin of neat CLWK or 100:0:0 CLWK:CTWK:SRC in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
10	0.1834	2.1428	0.5357	0.8214	0.4345
	0.1836	2.4286	0.6071		
	0.1856	5.2857	1.3214		
20	0.1862	6.1429	1.5357	0.7024	0.7357
	0.1831	1.7143	0.4286		
	0.1823	0.5714	0.1429		
30	0.1847	4.0000	1.0000	1.0238	0.2865
	0.184	3.0000	0.7500		
	0.1856	5.2857	1.3214		
45	0.1894	10.7143	2.6786	0.9881	1.4679
	0.1826	1.0000	0.2500		
	0.182	0.1429	0.0357		
60	0.18234	0.6286	0.1571	0.9214	1.1258
	0.1881	8.8571	2.2143		
	0.183	1.5714	0.3929		
90	0.1821	0.2857	0.0714	0.1786	0.0945
	0.1825	0.8571	0.2143		
	0.1826	1.0000	0.2500		
120	0.1843	3.4286	0.8571	2.1190	2.9260
	0.182	0.1429	0.0357		
	0.1972	21.8571	5.4643		
180	0.1831	1.7143	0.4286	1.9048	1.4153
	0.191	13.0000	3.2500		
	0.1876	8.1429	2.0357		
300	0.1842	3.2857	0.8214	1.4286	1.7760
	0.1915	13.7143	3.4286		
	0.182	0.1428	0.0357		
480	0.1874	7.8571	1.9643	1.3690	0.9101
	0.1828	1.2857	0.3214		
	0.187	7.2857	1.8214		
720	0.1822	0.4286	0.1071	1.0476	1.7226
	0.1904	12.1429	3.0357		
	0.1819	0.0000	0.0000		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.1878	8.4286	2.1071	1.6786	1.4070
	0.1822	0.4286	0.1071		
	0.1898	11.2857	2.8214		
2160	0.187	7.2857	1.8214	1.4405	1.2928
	0.1819	0.0000	0.0000		
	0.1889	10.0000	2.5000		
2880	0.1842	3.2857	0.8214	0.8929	0.1890
	0.184	3.0000	0.7500		
	0.185	4.4286	1.1071		
3600	0.1857	5.4286	1.3571	1.2381	0.2062
	0.1847	4.0000	1.0000		
	0.1857	5.4286	1.3571		
4320	0.18837	9.2429	2.3107	1.1631	0.9953
	0.1834	2.1429	0.5357		
	0.1837	2.5714	0.6429		

Table B3 Releasing of sericin of 100:0:25 CLWK:CTWK:SRC in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
10	0.1874	7.8571	1.9643	5.8333	4.6062
	0.1948	18.4286	4.6071		
	0.2125	43.7143	10.9286		
20	0.2027	29.7143	7.4286	8.6667	1.7578
	0.2118	42.7143	10.6786		
	0.2040	31.5714	7.8929		
30	0.2057	34.0000	8.5000	8.8690	0.5204
	0.2061	34.5714	8.6429		
	0.2084	37.8571	9.4643		
45	0.2335	73.7143	18.4286	19.1429	4.5777
	0.2492	96.1429	24.0357		
	0.2238	59.8571	14.9643		
60	0.2226	58.1429	14.5357	16.8929	4.8764
	0.2449	90.0000	22.5000		
	0.2201	54.5714	13.6429		
90	0.2709	127.1429	31.7857	32.5119	4.1021
	0.2626	115.2857	28.8214		
	0.2853	147.7143	36.9286		
120	0.2580	108.7143	27.1786	29.8095	4.5879
	0.2579	108.5714	27.1429		
	0.2802	140.4286	35.1071		
180	0.2681	123.1429	30.7857	31.0952	0.8641
	0.2671	121.7143	30.4286		
	0.2717	128.2857	32.0714		
300	0.2733	130.5714	32.6429	31.9286	1.0000
	0.2681	123.1429	30.7857		
	0.2725	129.4286	32.3571		
480	0.2643	117.7143	29.4286	31.1190	3.1154
	0.2637	116.8571	29.2143		
	0.2791	138.8571	34.7143		
720	0.2631	116.0000	29.0000	30.5595	1.3704
	0.2690	124.4286	31.1071		
	0.2703	126.2857	31.5714		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.2622	114.7143	28.6786	32.6786	3.4951
	0.2803	140.5714	35.1429		
	0.2777	136.8571	34.2143		
2160	0.2784	137.8571	34.4643	31.8095	2.6084
	0.2707	126.8571	31.7143		
	0.2638	117.0000	29.2500		
2880	0.2706	126.7143	31.6786	30.8810	0.8036
	0.2661	120.2857	30.0714		
	0.2684	123.5714	30.8929		
3600	0.2557	105.4286	26.3571	32.8333	7.3497
	0.2962	163.2857	40.8214		
	0.2696	125.2857	31.3214		
4320	0.2794	139.2857	34.8214	33.4643	3.4224
	0.2647	118.2857	29.5714		
	0.2827	144.0000	36.0000		

Table B4 Releasing of sericin of 75;25;25 CLWK:CTWK:SRC in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
10	0.228	65.8571	16.4643	15.0714	1.8024
	0.2184	52.1429	13.0357		
	0.2259	62.8571	15.7143		
20	0.2284	66.4286	16.6071	19.1905	2.2532
	0.2400	83.0000	20.7500		
	0.2385	80.8571	20.2143		
30	0.2666	121.0000	30.2500	29.8571	0.4330
	0.2657	119.7143	29.9286		
	0.2642	117.5714	29.3929		
45	0.254	103.0000	25.7500	28.6667	3.2554
	0.2605	112.2857	28.0714		
	0.272	128.7143	32.1786		
60	0.2632	116.1429	29.0357	31.1548	1.8573
	0.2729	130.0000	32.5000		
	0.2713	127.7143	31.9286		
90	0.2623	114.8572	28.7143	30.0357	4.4186
	0.2559	105.7143	26.4286		
	0.2798	139.8571	34.9643		
120	0.2604	112.1428	28.0357	28.1071	0.4330
	0.2595	110.8571	27.7143		
	0.2619	114.2857	28.5714		
180	0.2796	139.5714	34.8929	33.7262	1.0204
	0.2743	132.0000	33.0000		
	0.2751	133.1429	33.2857		
300	0.2758	134.1429	33.5357	34.0595	2.1554
	0.2721	128.8571	32.2143		
	0.2839	145.7143	36.4286		
480	0.299	167.2857	41.8214	36.0000	5.1363
	0.2718	128.4286	32.1071		
	0.2773	136.2857	34.0714		
720	0.2886	152.4286	38.1071	38.7976	1.0160
	0.2938	159.8571	39.9643		
	0.2892	153.2857	38.3214		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.306	177.2857	44.3214	39.9405	3.9146
	0.2903	154.8571	38.7143		
	0.2849	147.1428	36.7857		
2160	0.2988	167.0000	41.7500	39.1786	3.0658
	0.2821	143.1428	35.7857		
	0.2939	160.0000	40.0000		
2880	0.2987	166.8572	41.7143	40.8929	2.5821
	0.3022	171.8571	42.9643		
	0.2883	152.0000	38.0000		
3600	0.3061	177.4286	44.3571	40.7143	3.1677
	0.2916	156.7143	39.1786		
	0.29	154.4286	38.6071		
4320	0.3042	174.7143	43.6786	41.7262	2.1681
	0.2922	157.5714	39.3929		
	0.2998	168.4286	42.1071		

Table B5 Releasing of sericin of 50:50:25 CLWK:CTWK:SRC in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
10	0.2116	42.4286	10.6071	10.0476	3.9052
	0.2201	54.5714	13.6429		
	0.1984	23.5714	5.8929		
20	0.208	37.2857	9.3214	8.7500	1.1158
	0.2028	29.8571	7.4643		
	0.2084	37.8571	9.4643		
30	0.2043	32.0000	8.0000	13.0357	4.3838
	0.2267	64.0000	16.0000		
	0.2242	60.4286	15.1071		
45	0.2248	61.2857	15.3214	15.7619	1.2558
	0.23	68.7143	17.1786		
	0.2233	59.1429	14.7857		
60	0.2333	73.4286	18.3571	20.2262	1.6538
	0.2402	83.2857	20.8214		
	0.2421	86.0000	21.5000		
90	0.2423	86.2857	21.5714	20.7857	7.3530
	0.2185	52.2857	13.0714		
	0.2595	110.8571	27.7143		
120	0.234	74.4286	18.6071	19.7976	1.0911
	0.24	83.0000	20.7500		
	0.238	80.1429	20.0357		
180	0.2492	96.1429	24.0357	20.3452	3.3090
	0.2361	77.4286	19.3571		
	0.2313	70.5714	17.6429		
300	0.2473	93.4286	23.3571	21.0714	3.1888
	0.2307	69.7143	17.4286		
	0.2447	89.7143	22.4286		
480	0.2442	89.0000	22.2500	20.5119	1.9796
	0.2405	83.7143	20.9286		
	0.2333	73.4286	18.3571		
720	0.2349	75.7143	18.9286	20.7262	1.5618
	0.2421	86.0000	21.5000		
	0.2428	87.0000	21.7500		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.2351	76.0000	19.0000	21.6190	2.4004
	0.2439	88.5714	22.1429		
	0.2483	94.8572	23.7143		
2160	0.2514	99.2857	24.8214	21.1905	3.8980
	0.2426	86.7143	21.6786		
	0.2297	68.2857	17.0714		
2880	0.2442	89.0000	22.2500	21.0595	1.7043
	0.2354	76.4286	19.1071		
	0.243	87.2857	21.8214		
3600	0.2388	81.2857	20.3214	22.4643	2.3862
	0.252	100.1429	25.0357		
	0.2436	88.1429	22.0357		
4320	0.2333	73.4286	18.3571	21.2262	2.8226
	0.2491	96.0000	24.0000		
	0.2416	85.2857	21.3214		

Table B6 Releasing of sericin of 25:75:25 CLWK:CTWK:SRC in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
10	0.1874	7.8571	1.9643	1.5952	0.3201
	0.1859	5.7143	1.4286		
	0.1858	5.5714	1.3929		
20	0.1908	12.7143	3.1786	3.5595	3.7289
	0.2028	29.8572	7.4643		
	0.1820	0.1429	0.0357		
30	0.1993	24.8572	6.2143	5.2262	2.7610
	0.2025	29.4286	7.3571		
	0.1878	8.4286	2.1071		
45	0.2215	56.5714	14.1429	11.1905	3.2243
	0.2146	46.7143	11.6786		
	0.2036	31.0000	7.7500		
60	0.2107	41.1429	10.2857	9.3571	2.2888
	0.2128	44.1429	11.0357		
	0.2008	27.0000	6.7500		
90	0.2093	39.1429	9.7857	11.2857	1.7068
	0.2125	43.7143	10.9286		
	0.2187	52.5714	13.1429		
120	0.2059	34.2857	8.5714	10.7500	4.7317
	0.2272	64.7143	16.1786		
	0.2029	30.0000	7.5000		
180	0.2071	36.0000	9.0000	11.9524	3.6772
	0.2269	64.2857	16.0714		
	0.2121	43.1428	10.7857		
300	0.209	38.7143	9.6786	12.5476	3.0914
	0.2159	48.5714	12.1429		
	0.2262	63.2857	15.8214		
480	0.2142	46.1429	11.5357	13.3333	1.6195
	0.2205	55.1429	13.7857		
	0.223	58.7143	14.6786		
720	0.2150	47.2857	11.8214	12.4405	4.6028
	0.2048	32.7143	8.1786		
	0.2304	69.2857	17.3214		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.2173	50.5714	12.6429	11.8929	1.6839
	0.2185	52.2857	13.0714		
	0.2098	39.8571	9.9643		
2160	0.2184	52.1429	13.0357	13.7500	4.7547
	0.2082	37.5714	9.3929		
	0.2346	75.2857	18.8214		
2880	0.2218	57.0000	14.2500	13.3571	3.7764
	0.2284	66.4286	16.6071		
	0.2077	36.8572	9.2143		
3600	0.2025	29.4286	7.3571	12.3690	4.7424
	0.2289	67.1429	16.7857		
	0.2182	51.8571	12.9643		
4320	0.2141	46.0000	11.5000	13.6786	5.7640
	0.2385	80.8572	20.2143		
	0.208	37.2857	9.3214		

Table B7 Releasing of sericin of 0:100:25 CLWK:CTWK:SRC in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
10	0.1850	4.4286	1.1071	3.3690	2.4245
	0.1985	23.7143	5.9286		
	0.1905	12.2857	3.0714		
20	0.1908	12.7143	3.1786	3.5595	3.7289
	0.2028	29.8572	7.4643		
	0.1820	0.1429	0.0357		
30	0.1931	16.0000	4.0000	2.8571	1.2862
	0.186	5.8571	1.4643		
	0.1906	12.4286	3.1071		
45	0.1950	18.7143	4.6786	6.9405	2.4245
	0.2085	38.0000	9.5000		
	0.2005	26.5714	6.6429		
60	0.2110	41.5714	10.3929	9.8690	0.4592
	0.2086	38.1429	9.5357		
	0.2090	38.7143	9.6786		
90	0.1927	15.4286	3.8571	5.4881	1.8980
	0.2031	30.2857	7.5714		
	0.196	20.1428	5.0357		
120	0.1909	12.8571	3.2143	4.7262	2.0869
	0.2018	28.4286	7.1071		
	0.1927	15.4286	3.8571		
180	0.1846	3.8571	0.9643	3.1667	2.2707
	0.1973	22.0000	5.5000		
	0.1904	12.1429	3.0357		
300	0.1995	25.1428	6.2857	4.2262	2.0899
	0.1939	17.1429	4.2857		
	0.1878	8.4286	2.1071		
480	0.1879	8.5714	2.1429	5.3810	2.9540
	0.1989	24.2857	6.0714		
	0.2041	31.7143	7.9286		
720	0.1907	12.5714	3.1429	6.1667	2.6595
	0.2047	32.5714	8.1429		
	0.2021	28.8571	7.2143		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.1885	9.4286	2.3571	6.5357	5.4339
	0.2174	50.7143	12.6786		
	0.1947	18.2857	4.5714		
2160	0.2098	39.8572	9.9643	6.9524	2.8848
	0.2006	26.7143	6.6786		
	0.1937	16.8571	4.2143		
2880	0.2089	38.5714	9.6429	7.8214	1.5775
	0.2012	27.5714	6.8929		
	0.2013	27.7143	6.9286		
3600	0.2192	53.2857	13.3214	9.4524	3.4631
	0.2005	26.5714	6.6429		
	0.2054	33.5714	8.3929		
4320	0.2057	34.0000	8.5000	10.5000	2.2452
	0.2101	40.2857	10.0714		
	0.2181	51.7143	12.9286		

Table B8 Releasing of sericin of 100:0:100 CLWK:CTWK:SRC in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.5957	591.2143	36.9509	29.7262	6.2704
	0.4698	411.2143	25.7009		
	0.4790	424.4285	26.5268		
20	0.4030	315.8571	19.7411	26.0432	5.5822
	0.4958	448.3572	28.0223		
	0.5220	485.8571	30.3661		
30	0.5880	580.1429	36.2589	35.8795	1.3465
	0.5962	591.9286	36.9955		
	0.5670	550.1428	34.3839		
45	0.6323	643.3572	40.2098	40.1577	0.2826
	0.6283	637.6429	39.8527		
	0.6345	646.5714	40.4107		
60	0.6202	626.2143	39.1384	37.0327	2.6075
	0.5640	545.8572	34.1161		
	0.6058	605.5000	37.8438		
90	0.5295	496.5714	31.0357	30.3810	0.5945
	0.5165	478.0000	29.8750		
	0.5205	483.7143	30.2321		
120	0.7100	754.4286	47.1518	42.4271	4.4084
	0.6490	667.2857	41.7054		
	0.6123	614.7857	38.4241		
180	0.5887	581.2143	36.3259	33.0446	2.8480
	0.5315	499.4286	31.2143		
	0.5358	505.5000	31.5938		
300	0.6455	662.2857	41.3929	40.3185	1.1703
	0.6195	625.1429	39.0714		
	0.6354	647.8571	40.4911		
480	0.6613	684.8572	42.8036	41.0863	1.6676
	0.6240	631.5714	39.4732		
	0.6409	655.7143	40.9821		
720	0.6613	684.8571	42.8036	41.2292	1.3734
	0.6367	649.7143	40.6071		
	0.6330	644.4286	40.2768		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.6598	682.7143	42.6696	40.7262	1.7110
	0.6306	641.0000	40.0625		
	0.6237	631.1428	39.4464		
2160	0.6659	691.4286	43.2143	41.7440	1.2764
	0.6422	657.5714	41.0982		
	0.6402	654.7143	40.9196		
2880	0.6607	684.0000	42.7500	41.6250	1.0910
	0.6363	649.1429	40.5714		
	0.6473	664.8572	41.5536		
3600	0.6671	693.1428	43.3214	41.4613	2.0528
	0.6501	668.8571	41.8036		
	0.6216	628.1429	39.2589		
4320	0.6247	632.5714	39.5357	40.6488	1.0161
	0.6398	654.1428	40.8839		
	0.6470	664.4286	41.5268		

Table B9 Releasing of sericin of 75:25:100 CLWK:CTWK:SRC in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.6825	715.1429	44.6964	43.0223	4.6196
	0.6052	604.7857	37.7991		
	0.7035	745.1428	46.5714		
20	0.7923	871.9286	54.4955	53.2530	3.6553
	0.7322	786.2143	49.1384		
	0.8105	898.0000	56.1250		
30	0.7357	791.2142	49.4509	51.2589	3.3465
	0.7330	787.2858	49.2054		
	0.7993	881.9286	55.1205		
45	0.8663	977.6429	61.1027	58.4315	2.7607
	0.8045	889.4285	55.5893		
	0.8382	937.6428	58.6027		
60	0.8173	907.6429	56.7277	57.2262	0.8634
	0.8340	931.5714	58.2232		
	0.8173	907.6429	56.7277		
90	0.8410	941.5714	58.8482	61.9063	3.0806
	0.8748	989.7857	61.8616		
	0.9100	1040.143	65.0089		
120	0.9877	1151.214	71.9509	68.4315	3.3901
	0.9120	1043.000	65.1875		
	0.9452	1090.500	68.1562		
180	0.9138	1045.500	65.3438	64.3616	2.5985
	0.8698	982.6429	61.4152		
	0.9247	1061.214	66.3259		
300	0.9384	1080.714	67.5446	67.3155	1.8011
	0.9546	1103.857	68.9911		
	0.9145	1046.571	65.4107		
480	0.9126	1043.857	65.2411	67.5179	2.0030
	0.9548	1104.143	69.0089		
	0.9469	1092.857	68.3036		
720	0.9465	1092.286	68.2679	67.9464	0.5958
	0.9352	1076.143	67.2589		
	0.9470	1093.000	68.3125		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.9689	1124.286	70.2679	68.6220	1.6795
	0.9512	1099.000	68.6875		
	0.9313	1070.571	66.9107		
2160	0.9794	1139.286	71.2054	69.6339	1.5167
	0.9455	1090.857	68.1786		
	0.9605	1112.286	69.5179		
2880	0.9940	1160.143	72.5089	69.1280	2.9300
	0.9384	1080.714	67.5446		
	0.9360	1077.286	67.3304		
3600	0.9671	1121.714	70.1071	68.2470	2.0528
	0.9501	1097.429	68.5893		
	0.9216	1056.714	66.0446		
4320	0.9663	1120.571	70.0357	69.4554	0.5042
	0.9561	1106.000	69.1250		
	0.9570	1107.286	69.2054		

Table B10 Releasing of sericin of 50:50:100 CLWK:CTWK:SRC in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g}/\text{ml}$)	%Protein Releasing	Average	SD
10	0.6670	693.0000	43.3125	40.4033	2.7001
	0.6290	638.7143	39.9196		
	0.6072	607.6428	37.9777		
20	0.7020	743.0000	46.4375	49.0565	3.3591
	0.7738	845.5000	52.8438		
	0.7182	766.2143	47.8884		
30	0.7120	757.2857	47.3304	49.7708	2.2691
	0.7622	829.0714	51.8170		
	0.7438	802.6429	50.1652		
45	0.7200	768.7142	48.0446	49.3244	2.8576
	0.7710	841.5714	52.5982		
	0.7120	757.2857	47.3304		
60	0.7510	813.0000	50.8125	53.1190	2.7550
	0.7685	838.0000	52.3750		
	0.8110	898.7143	56.1696		
90	0.6805	712.2857	44.5179	47.8363	3.7084
	0.7100	754.4286	47.1518		
	0.7625	829.4286	51.8393		
120	0.8032	887.6429	55.4777	54.3021	1.0423
	0.7810	855.8572	53.4911		
	0.7860	863.0000	53.9375		
180	0.8423	943.3571	58.9598	56.9881	2.8193
	0.8343	931.9286	58.2455		
	0.7840	860.1429	53.7589		
300	0.8104	897.8571	56.1161	57.1488	2.2031
	0.8503	954.8571	59.6786		
	0.8052	890.4286	55.6518		
480	0.7904	869.2857	54.3304	57.0863	2.3868
	0.8365	935.1429	58.4464		
	0.8369	935.7143	58.4821		
720	0.8222	914.7143	57.1696	55.9940	1.3054
	0.7933	873.4286	54.5893		
	0.8116	899.5714	56.2232		

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
1440	0.7826	858.1429	53.6339	56.3631	2.4186
	0.8342	931.8571	58.2411		
	0.8227	915.4286	57.2143		
2160	0.8095	896.5714	56.0357	58.1902	1.8662
	0.8453	947.7143	59.2321		
	0.8461	948.8429	59.3027		
2880	0.8507	955.4286	59.7143	58.9345	0.8620
	0.8436	945.2857	59.0804		
	0.8316	928.1429	58.0089		
3600	0.8369	935.7143	58.4821	58.3780	1.7568
	0.8548	961.2857	60.0804		
	0.8155	905.1428	56.5714		
4320	0.8253	919.1428	57.4464	58.2143	2.8032
	0.8687	981.1428	61.3214		
	0.8077	894.0000	55.8750		

Table B11 Releasing of sericin of 25:75:100 CLWK:CTWK:SRC in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.3795	282.2857	17.6429	17.3155	1.7640
	0.3935	302.2857	18.8929		
	0.3545	246.5714	15.4107		
20	0.3565	249.4286	15.5893	16.9286	1.3175
	0.3860	291.5714	18.2232		
	0.3720	271.5714	16.9732		
30	0.3848	289.7857	18.1116	18.3199	0.5023
	0.3935	302.2857	18.8929		
	0.3830	287.2857	17.9554		
45	0.4187	338.3571	21.1473	19.9494	1.7746
	0.4147	332.6428	20.7902		
	0.3825	286.5714	17.9107		
60	0.3877	294.0714	18.3795	20.3214	1.9881
	0.4323	357.6429	22.3527		
	0.4085	323.7143	20.2321		
90	0.4408	369.7857	23.1116	24.2426	1.1740
	0.4670	407.2857	25.4554		
	0.4525	386.5714	24.1607		
120	0.4423	371.9286	23.2455	25.0908	1.8092
	0.4638	402.6429	25.1652		
	0.4828	429.7857	26.8616		
180	0.4855	433.7143	27.1071	29.0491	1.8989
	0.5082	466.2143	29.1384		
	0.5280	494.4286	30.9018		
300	0.5618	542.7143	33.9196	31.9107	1.9700
	0.5384	509.2857	31.8304		
	0.5177	479.7143	29.9821		
480	0.5411	513.1428	32.0714	29.9256	1.8883
	0.5088	467.0000	29.1875		
	0.5013	456.2857	28.5179		
720	0.5770	564.4286	35.2768	32.9077	2.0524
	0.5378	508.4286	31.7768		
	0.5366	506.7143	31.6696		

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
1440	0.5588	538.4286	33.6518	30.8512	2.5197
	0.5194	482.1428	30.1339		
	0.5041	460.2857	28.7679		
2160	0.5342	503.2857	31.4554	30.1815	1.4248
	0.5027	458.2857	28.6429		
	0.5229	487.1429	30.4464		
2880	0.5261	491.7143	30.7321	30.1905	2.0022
	0.5388	509.8572	31.8661		
	0.4952	447.5714	27.9732		
3600	0.5352	504.7143	31.5446	30.0625	1.6951
	0.4979	451.4286	28.2143		
	0.5227	486.8572	30.4286		
4320	0.5047	461.1428	28.8214	30.0655	2.0247
	0.5448	518.4286	32.4018		
	0.5064	463.5714	28.9732		

Table B12 Releasing of sericin of 0:100:100 CLWK:CTWK:SRC in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
10	0.3932	301.9286	18.8705	19.5625	1.3162
	0.3918	299.7857	18.7366		
	0.4180	337.2857	21.0804		
20	0.4230	344.4286	21.5268	18.3348	2.8696
	0.3780	280.1428	17.5089		
	0.3607	255.5000	15.9687		
30	0.3650	261.5714	16.3482	17.3824	1.0380
	0.3882	294.7857	18.4241		
	0.3765	278.0000	17.3750		
45	0.4137	331.2143	20.7009	21.3110	0.5924
	0.4210	341.5714	21.3482		
	0.4270	350.1428	21.8839		
60	0.4090	324.4286	20.2768	18.4836	1.7748
	0.3885	295.1428	18.4464		
	0.3692	267.6428	16.7277		
90	0.4380	365.8572	22.8661	21.3333	1.6381
	0.4230	344.4286	21.5268		
	0.4015	313.7143	19.6071		
120	0.4062	320.5000	20.0312	21.8988	2.6404
	0.4142	331.9286	20.7455		
	0.4610	398.7143	24.9196		
180	0.4413	370.5000	23.1563	23.3199	2.9944
	0.4775	422.2857	26.3929		
	0.4105	326.5714	20.4107		
300	0.5052	461.8571	28.8661	27.8750	1.3903
	0.5008	455.5714	28.4732		
	0.4763	420.5714	26.2857		
480	0.5031	458.8572	28.6786	28.0417	1.7499
	0.4738	417.0000	26.0625		
	0.5110	470.1429	29.3839		
720	0.5245	489.4286	30.5893	30.1994	0.9171
	0.5275	493.7143	30.8571		
	0.5084	466.4286	29.1518		

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
1440	0.4939	445.7143	27.8571	28.4107	1.0371
	0.4929	444.2857	27.7679		
	0.5135	473.7143	29.6071		
2160	0.5264	492.1428	30.7589	29.1012	1.6302
	0.5072	464.7143	29.0446		
	0.4899	440.0000	27.5000		
2880	0.5147	475.4286	29.7143	28.8988	0.8551
	0.4956	448.1429	28.0089		
	0.5064	463.5714	28.9732		
3600	0.5127	472.5714	29.5357	28.7738	1.3119
	0.4872	436.1429	27.2589		
	0.5126	472.4286	29.5268		
4320	0.5022	457.5714	28.5982	29.7530	1.0401
	0.5184	480.7143	30.0446		
	0.5248	489.8571	30.6161		

Table B13 Protein concentration of 0.01%w/v lysozyme in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	Average	SD
10	0.2500	97.2857	95.3929	18.8016
	0.2667	121.1429		
	0.2373	79.1429		
	0.2407	84.0000		
20	0.2558	105.5714	92.8571	15.8234
	0.2566	106.7143		
	0.2343	74.8571		
	0.2409	84.2857		
30	0.2248	61.2857	86.7857	18.8847
	0.2415	85.1429		
	0.2487	95.4286		
	0.2556	105.2857		
45	0.2559	105.7143	86.3929	27.3001
	0.2143	46.2857		
	0.2527	101.1429		
	0.2466	92.4286		
60	0.2404	83.5714	90.6429	32.3145
	0.2561	106.0000		
	0.2162	49.0000		
	0.2687	124.0000		
90	0.2339	74.2857	86.4286	12.4228
	0.2388	81.2857		
	0.2543	103.4286		
	0.2426	86.7143		
120	0.2330	73.0000	88.5000	14.2635
	0.2572	107.5714		
	0.2426	86.7143		
	0.2571	107.4286		
180	0.2556	105.2857	96.8929	7.1050
	0.2437	88.2857		
	0.2511	98.8571		
	0.2485	95.1428		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	Average	SD
300	0.2527	101.1429	94.8929	13.9802
	0.2448	89.8571		
	0.2366	78.1429		
	0.2592	110.4286		
480	0.2398	82.7143	93.2500	8.2234
	0.2454	90.7143		
	0.2517	99.7143		
	0.2518	99.8571		
720	0.2509	98.5714	98.5000	5.4192
	0.2470	93.0000		
	0.2495	96.5714		
	0.2560	105.8571		
1440	0.2610	113.0000	98.8929	15.2161
	0.2374	79.2857		
	0.2482	94.7143		
	0.2579	108.5714		
2160	0.2635	116.5714	98.6786	16.4856
	0.2445	89.4286		
	0.2575	108.0000		
	0.2384	80.7143		
2880	0.2328	72.7143	99.5000	21.0198
	0.2675	122.2857		
	0.2485	95.1428		
	0.2574	107.8572		
3600	0.2316	71.0000	91.2857	19.2841
	0.2544	103.5714		
	0.2599	111.4286		
	0.2373	79.1428		
4320	0.2753	133.4286	94.4286	29.7273
	0.2423	86.2857		
	0.2252	61.8571		
	0.2492	96.1429		

Table B14 Releasing of sericin of neat CLWK or 100:0:0 CLWK:CTWK:SRC in 0.1%w/v lysozyme in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
10	0.2555	9.7500	2.4375	1.7113	1.2270
	0.2495	1.1786	0.2946		
	0.2554	9.6071	2.4018		
20	0.2504	5.0000	1.2500	2.2381	0.8559
	0.2546	11.0000	2.7500		
	0.2545	10.8572	2.7143		
30	0.2454	3.9286	0.9821	2.1369	1.0002
	0.2503	10.9286	2.7321		
	0.2502	10.7857	2.6964		
45	0.2468	6.3214	1.5804	1.8780	1.9280
	0.2534	15.7500	3.9375		
	0.2427	0.4643	0.1161		
60	0.2502	6.9286	1.7321	1.7917	1.6615
	0.2458	0.6429	0.1607		
	0.2551	13.9286	3.4821		
90	0.2495	10.1429	2.5357	2.6905	0.4320
	0.2513	12.7143	3.1786		
	0.2490	9.4286	2.3571		
120	0.2475	0.0357	0.0089	0.9613	1.0242
	0.2498	3.3214	0.8304		
	0.2532	8.1786	2.0446		
180	0.2499	0.2500	0.0625	0.2768	0.1988
	0.2510	1.8214	0.4554		
	0.2506	1.2500	0.3125		
300	0.2505	3.1071	0.7768	0.9673	0.8028
	0.2491	1.1072	0.2768		
	0.2535	7.3929	1.8482		
480	0.2597	17.8928	4.4732	2.3065	1.8980
	0.2498	3.7500	0.9375		
	0.2514	6.0357	1.5089		
720	0.2536	3.9286	0.9821	0.7440	0.5080
	0.2539	4.3571	1.0893		
	0.2513	0.6429	0.1607		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.2607	13.6786	3.4196	1.7173	1.6623
	0.2557	6.5357	1.6339		
	0.2514	0.3929	0.0982		
2160	0.2565	7.8928	1.9732	1.4851	1.0040
	0.2519	1.3214	0.3304		
	0.2570	8.6071	2.1518		
2880	0.2522	0.9286	0.2321	1.6845	1.7237
	0.2550	4.9286	1.2321		
	0.2616	14.3571	3.5893		
3600	0.2478	2.8572	0.7143	1.9524	1.6199
	0.2496	5.4286	1.3571		
	0.2564	15.1429	3.7857		
4320	0.2498	2.5714	0.6429	0.4762	0.2887
	0.2484	0.5714	0.1429		
	0.2498	2.5714	0.6429		

Table B15 Releasing of sericin of 100:0:25 CLWK:CTWK:SRC in 0.1%w/v lysozyme in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.2908	60.1786	15.0446	18.3423	3.0086
	0.3073	83.7500	20.9375		
	0.3020	76.1786	19.0446		
20	0.2998	75.5714	18.8929	25.3690	6.5549
	0.3175	100.8572	25.2143		
	0.3365	128.0000	32.0000		
30	0.3067	91.5000	22.8750	25.9940	2.8034
	0.3219	113.2143	28.3036		
	0.3177	107.2143	26.8036		
45	0.3249	117.8929	29.4732	27.3661	2.2019
	0.3126	100.3214	25.0804		
	0.3195	110.1786	27.5446		
60	0.3237	111.9286	27.9821	26.7441	1.3953
	0.3160	100.9286	25.2321		
	0.3210	108.0714	27.0179		
90	0.3280	122.2857	30.5714	27.5595	3.6753
	0.3081	93.8572	23.4643		
	0.3226	114.5714	28.6429		
120	0.3371	128.0357	32.0089	27.7946	3.7059
	0.3176	100.1785	25.0446		
	0.3212	105.3214	26.3304		
180	0.3307	115.6786	28.9196	31.1934	1.9873
	0.3410	130.3929	32.5982		
	0.3395	128.2500	32.0625		
300	0.3295	115.9643	28.9911	31.4554	2.7942
	0.3348	123.5357	30.8839		
	0.3449	137.9643	34.4911		
480	0.3457	140.7500	35.1875	39.6012	12.2330
	0.3317	120.7500	30.1875		
	0.3315	213.7143	53.4286		
720	0.3510	143.0714	35.7679	32.6607	2.8769
	0.3351	120.3571	30.0893		
	0.3408	128.5000	32.1250		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.3509	142.5357	35.6339	34.1339	1.6178
	0.3419	129.6786	32.4196		
	0.3473	137.3929	34.3482		
2160	0.3511	143.0357	35.7589	35.2946	2.5850
	0.3563	150.4643	37.6161		
	0.3420	130.0357	32.5089		
2880	0.3591	153.6428	38.4107	36.0179	3.6315
	0.3574	151.2143	37.8036		
	0.3407	127.3571	31.8393		
3600	0.3484	146.5714	36.6429	37.2262	2.6732
	0.3435	139.5714	34.8929		
	0.3582	160.5715	40.1429		
4320	0.3458	139.7143	34.9286	37.3929	2.4294
	0.3594	159.1429	39.7857		
	0.3529	149.8571	37.4643		

Table B16 Releasing of sericin of 75:25:25 CLWK:CTWK:SRC in 0.1%w/v lysozyme in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.2869	54.6071	13.6518	18.8780	4.9701
	0.3031	77.7500	19.4375		
	0.3146	94.1786	23.5446		
20	0.3437	138.2857	34.5714	32.4524	2.6882
	0.3293	117.7143	29.4286		
	0.3403	133.4286	33.3571		
30	0.3095	95.5000	23.8750	32.0536	7.2151
	0.3477	150.0714	37.5179		
	0.34	139.0714	34.7679		
45	0.323	115.1786	28.7946	35.8304	7.3984
	0.3643	174.1786	43.5446		
	0.3408	140.6072	35.1518		
60	0.335	128.0714	32.0179	36.3274	4.1529
	0.348	146.6429	36.6607		
	0.3582	161.2143	40.3036		
90	0.367	178.0000	44.5000	40.5000	3.4905
	0.3514	155.7143	38.9286		
	0.349	152.2857	38.0714		
120	0.3637	166.0357	41.5089	42.2470	3.5579
	0.357	156.4643	39.1161		
	0.3766	184.4643	46.1161		
180	0.3791	184.8214	46.2054	43.3601	5.2089
	0.3543	149.3929	37.3482		
	0.38	186.1072	46.5268		
300	0.3678	170.6786	42.6696	44.9077	1.9931
	0.3759	182.2500	45.5625		
	0.3785	185.9643	46.4911		
480	0.3817	192.1786	48.0446	49.5446	2.9129
	0.3953	211.6071	52.9018		
	0.3807	190.7500	47.6875		
720	0.3891	197.5000	49.3750	49.5893	0.6691
	0.3918	201.3572	50.3393		
	0.3882	196.2143	49.0536		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.3976	209.2500	52.3125	51.0625	1.1345
	0.3914	200.3928	50.0982		
	0.3933	203.1071	50.7768		
2160	0.3977	209.6071	52.4018	50.5923	1.5869
	0.3908	199.7500	49.9375		
	0.3894	197.7500	49.4375		
2880	0.3982	209.5000	52.3750	51.2083	2.8962
	0.4009	213.3571	53.3393		
	0.3857	191.6429	47.9107		
3600	0.3898	205.7143	51.4286	51.3810	2.9289
	0.3814	193.7143	48.4286		
	0.3978	217.1428	54.2857		
4320	0.3918	205.4286	51.3571	51.6190	2.6170
	0.4002	217.4286	54.3571		
	0.3856	196.5714	49.1429		

Table B17 Releasing of sericin of 50:50:25 CLWK:CTWK:SRC in 0.1%w/v lysozyme in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.2898	58.7500	14.6875	14.6161	3.1792
	0.2806	45.6071	11.4018		
	0.2984	71.0357	17.7589		
20	0.2859	55.7143	13.9286	16.3809	2.5596
	0.3002	76.1428	19.0357		
	0.2922	64.7143	16.1786		
30	0.2904	68.2143	17.0536	16.8155	0.7778
	0.2873	63.7857	15.9464		
	0.2915	69.7857	17.4464		
45	0.2994	81.4643	20.3661	20.0327	0.9384
	0.2955	75.8929	18.9732		
	0.3005	83.0357	20.7589		
60	0.2989	76.5000	19.1250	17.6845	4.3095
	0.3044	84.3571	21.0893		
	0.2813	51.3571	12.8393		
90	0.3009	83.5714	20.8929	21.2500	1.0809
	0.2995	81.5714	20.3929		
	0.3053	89.8571	22.4643		
120	0.2986	73.0357	18.2589	16.3542	1.8590
	0.2930	65.0357	16.2589		
	0.2882	58.1786	14.5446		
180	0.3172	96.3929	24.0982	17.9792	6.4713
	0.2811	44.8214	11.2054		
	0.3019	74.5357	18.6339		
300	0.3226	106.1071	26.5268	27.9196	2.3816
	0.3342	122.6786	30.6696		
	0.3227	106.2500	26.5625		
480	0.3399	132.4643	33.1161	32.2827	0.7762
	0.3372	128.6071	32.1518		
	0.3356	126.3214	31.5804		
720	0.3240	104.5000	26.1250	28.7917	2.3707
	0.3337	118.3571	29.5893		
	0.3367	122.6428	30.6607		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.3454	134.6786	33.6696	31.2054	2.8884
	0.3405	127.6786	31.9196		
	0.3296	112.1071	28.0268		
2160	0.3488	139.7500	34.9375	33.2589	1.6786
	0.3394	126.3214	31.5804		
	0.3441	133.0357	33.2589		
2880	0.3434	131.2143	32.8036	31.2083	1.4040
	0.3360	120.6429	30.1607		
	0.3374	122.6429	30.6607		
3600	0.3539	154.4286	38.6071	34.8690	3.6466
	0.3335	125.2857	31.3214		
	0.3429	138.7143	34.6786		
4320	0.3481	143.0000	35.7500	33.7857	1.7035
	0.3401	131.5714	32.8929		
	0.3396	130.8572	32.7143		

Table B18 Releasing of sericin of 25:75:25 CLWK:CTWK:SRC in 0.1%w/v lysozyme in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.3048	80.1786	20.0446	16.8780	2.7508
	0.2909	60.3214	15.0804		
	0.2921	62.0357	15.5089		
20	0.2865	56.5714	14.1429	20.6786	5.7329
	0.3165	99.4286	24.8571		
	0.3114	92.1428	23.0357		
30	0.3082	93.6428	23.4107	23.4821	2.7864
	0.3007	82.9286	20.7321		
	0.3163	105.2143	26.3036		
45	0.3177	107.6071	26.9018	27.0565	3.0565
	0.3269	120.7500	30.1875		
	0.3098	96.3214	24.0804		
60	0.3067	87.6429	21.9107	25.6131	4.9475
	0.3117	94.7857	23.6964		
	0.3328	124.9286	31.2321		
90	0.3101	96.7143	24.1786	26.9405	2.3943
	0.3220	113.7143	28.4286		
	0.3214	112.8571	28.2143		
120	0.3371	128.0357	32.0089	28.0327	4.3846
	0.3128	93.3214	23.3304		
	0.3280	115.0358	28.7589		
180	0.3194	99.5357	24.8839	26.0030	4.2547
	0.3125	89.6786	22.4196		
	0.3357	122.8214	30.7054		
300	0.3177	99.1072	24.7768	27.5506	2.6679
	0.3261	111.1071	27.7768		
	0.3326	120.3929	30.0982		
480	0.3308	119.4643	29.8661	28.0446	2.0016
	0.3266	113.4643	28.3661		
	0.3197	103.6072	25.9018		
720	0.3215	100.9286	25.2321	27.0417	1.7077
	0.3272	109.0714	27.2679		
	0.3310	114.5000	28.6250		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.3282	110.1071	27.5268	26.4434	4.1955
	0.3122	87.2500	21.8125		
	0.3351	119.9643	29.9911		
2160	0.3213	100.4643	25.1161	27.1518	2.0913
	0.3267	108.1786	27.0446		
	0.3330	117.1786	29.2946		
2880	0.3270	107.7857	26.9464	27.3512	0.8279
	0.3308	113.2143	28.3036		
	0.3266	107.2143	26.8036		
3600	0.3198	105.7143	26.4286	27.6786	2.4808
	0.3188	104.2857	26.0714		
	0.3313	122.1429	30.5357		
4320	0.3368	126.8572	31.7143	27.9643	3.2586
	0.3218	105.4286	26.3571		
	0.3203	103.2857	25.8214		

Table B19 Releasing of sericin of 0:100:25 CLWK:CTWK:SRC in 0.1%w/v lysozyme in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
10	0.2818	47.3214	11.8304	12.4970	2.7401
	0.2921	62.0357	15.5089		
	0.2771	40.6071	10.1518		
20	0.2734	37.8571	9.4643	15.5000	5.8492
	0.2914	63.5714	15.8929		
	0.3061	84.5714	21.1429		
30	0.3143	102.3572	25.5893	23.4821	3.5267
	0.2970	77.6429	19.4107		
	0.3139	101.7857	25.4464		
45	0.2956	76.0357	19.0089	23.3542	4.0188
	0.3178	107.7500	26.9375		
	0.3099	96.4643	24.1161		
60	0.3195	105.9286	26.4821	22.4464	7.1141
	0.2852	56.9286	14.2321		
	0.3199	106.5000	26.6250		
90	0.3227	114.7143	28.6786	22.7857	5.5560
	0.3041	88.1428	22.0357		
	0.2918	70.5714	17.6429		
120	0.3161	98.0357	24.5089	24.3423	3.0748
	0.3068	84.7500	21.1875		
	0.3240	109.3214	27.3304		
180	0.3243	106.5357	26.6339	22.7173	3.4557
	0.3097	85.6786	21.4196		
	0.3060	80.3929	20.0982		
300	0.3195	101.6786	25.4196	23.4554	1.7587
	0.3125	91.6786	22.9196		
	0.3100	88.1071	22.0268		
480	0.3052	82.8929	20.7232	23.9613	3.1802
	0.3230	108.3214	27.0804		
	0.3146	96.3214	24.0804		
720	0.3000	70.2143	17.5536	22.3631	4.1707
	0.3208	99.9286	24.9821		
	0.3196	98.2143	24.5536		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.3065	79.1071	19.7768	20.3720	0.7435
	0.3075	80.5357	20.1339		
	0.3105	84.8214	21.2054		
2160	0.2939	61.3214	15.3304	20.5565	4.9701
	0.3101	84.4643	21.1161		
	0.3216	100.8929	25.2232		
2880	0.3179	94.7857	23.6964	21.0417	3.1307
	0.3127	87.3572	21.8393		
	0.3008	70.3571	17.5893		
3600	0.3052	84.9286	21.2321	23.1369	3.8531
	0.3230	110.2857	27.5714		
	0.3035	82.4286	20.6071		
4320	0.3132	93.2143	23.3036	22.5000	2.9841
	0.3018	76.7857	19.1964		
	0.3180	100.0000	25.0000		

Table B20 Releasing of sericin of 100:0:100 CLWK:CTWK:SRC in 0.1%w/v lysozyme in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.6792	615.0357	38.4397	39.7112	2.2581
	0.7226	677.0928	42.3183		
	0.6785	614.0072	38.3754		
20	0.7474	665.2286	41.5768	43.8982	2.9618
	0.7020	755.7429	47.2339		
	0.7356	686.1429	42.8839		
30	0.7271	692.1000	43.2562	41.7062	2.5135
	0.6773	620.9000	38.8063		
	0.7249	688.9000	43.0562		
45	0.7055	661.5786	41.3487	43.4737	2.3844
	0.7582	736.8357	46.0522		
	0.7242	688.3214	43.0201		
60	0.7317	694.8571	43.4286	43.4881	0.5160
	0.7270	688.0715	43.0045		
	0.7385	704.5000	44.0312		
90	0.7442	716.9286	44.8080	45.1503	1.5246
	0.7668	749.0714	46.8170		
	0.7333	701.2143	43.8259		
120	0.7559	726.2929	45.3933	46.3951	1.7693
	0.7900	775.0072	48.4379		
	0.7554	725.6643	45.3540		
180	0.7895	771.1357	48.1960	49.0436	1.5808
	0.8194	813.8786	50.8674		
	0.7881	769.0786	48.0674		
300	0.7755	753.1071	47.0692	49.5618	2.1635
	0.8190	815.2500	50.9531		
	0.8158	810.6072	50.6629		
480	0.8025	793.3072	49.5817	52.5756	2.8363
	0.8399	846.7642	52.9228		
	0.8004	883.5571	55.2223		
720	0.8286	825.3857	51.5866	50.0824	1.9512
	0.8196	812.5285	50.7830		
	0.7871	766.0428	47.8777		

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
1440	0.8590	868.4643	54.2790	51.6987	2.2652
	0.8198	812.4643	50.7790		
	0.8116	800.6072	50.0379		
2160	0.8118	801.1786	50.0737	51.0141	2.2591
	0.8040	790.0357	49.3772		
	0.8512	857.4643	53.5915		
2880	0.8074	794.0714	49.6295	51.1920	1.3571
	0.8348	833.2143	52.0759		
	0.8325	829.9286	51.8705		
3600	0.8016	794.0000	49.6250	51.5982	1.7586
	0.8394	848.0000	53.0000		
	0.8301	834.7143	52.1696		
4320	0.8228	821.1429	51.3214	51.5804	1.6891
	0.8084	800.5714	50.0357		
	0.8459	854.1429	53.3839		

Table B21 Releasing of sericin of 75:25:100 CLWK:CTWK:SRC in 0.1%w/v lysozyme in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.7126	662.6929	41.4183	43.7397	2.9618
	0.7759	753.2072	47.0754		
	0.7272	683.6072	42.7254		
20	0.8086	802.4285	50.1518	49.3161	3.4430
	0.7569	728.5143	45.5321		
	0.8323	836.2286	52.2643		
30	0.8561	876.3286	54.7705	54.3205	0.6034
	0.8434	858.1571	53.6348		
	0.8537	872.9	54.5562		
45	0.9688	1037.693	64.8558	64.7272	1.1500
	0.9794	1052.921	65.8076		
	0.9538	1016.293	63.5183		
60	0.9462	1001.286	62.5804	64.4182	2.7506
	0.9520	1009.5	63.0938		
	1.0022	1081.286	67.5804		
90	0.9665	1034.429	64.6518	65.8869	1.6794
	0.9728	1043.357	65.2098		
	1.0017	1084.786	67.7991		
120	1.0667	1170.264	73.1415	67.8073	4.6324
	0.9809	1047.764	65.4853		
	0.9732	1036.721	64.7951		
180	1.0670	1167.593	72.9746	69.8341	5.1636
	0.9651	1021.993	63.8746		
	1.0634	1162.45	72.6531		
300	1.0853	1195.607	74.7254	68.8624	5.6018
	0.9603	1017.036	63.5647		
	1.0133	1092.75	68.2969		
480	0.9853	1054.407	65.9004	68.9790	3.0500
	1.0536	1151.993	71.9996		
	1.0204	1104.593	69.0371		
720	0.9742	1033.357	64.5848	69.4539	5.4178
	1.0941	1204.643	75.2902		
	1.0179	1095.786	68.4866		

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
1440	1.0235	1103.429	68.9643	69.5141	0.4768
	1.0325	1116.25	69.7656		
	1.0330	1117	69.8125		
2160	1.0226	1102.321	68.8951	69.4844	1.2191
	1.0449	1134.179	70.8862		
	1.0201	1098.75	68.6719		
2880	1.0535	1145.643	71.6027	70.3527	1.4798
	1.0212	1099.5	68.7188		
	1.0438	1131.786	70.7366		
3600	1.0386	1132.571	70.7857	70.3423	0.3933
	1.0302	1120.571	70.0357		
	1.0321	1123.286	70.2054		
4320	1.0492	1144.571	71.5357	70.3393	1.0546
	1.0269	1112.714	69.5446		
	1.0313	1119	69.9375		

Table B22 Releasing of sericin of 50:50:100 CLWK:CTWK:SRC in 0.1%w/v lysozyme in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.75936	729.5500	45.5969	46.4540	0.7788
	0.77112	746.3500	46.6469		
	0.7764	753.8929	47.1183		
20	0.82212	821.7428	51.3589	52.1095	1.8259
	0.81562	812.4571	50.7786		
	0.85384	867.0571	54.1911		
30	0.9156	961.3572	60.0848	54.5562	4.8566
	0.8136	815.6428	50.9777		
	0.83184	841.7000	52.6062		
45	0.93246	985.8357	61.6147	61.3141	0.5788
	0.9332	986.8929	61.6808		
	0.92162	970.3500	60.6469		
60	0.8875	917.3571	57.3348	62.8259	8.1950
	0.905	942.3571	58.8973		
	1.0545	1155.929	72.2455		
90	0.9385	994.4285	62.1518	63.8631	4.3454
	0.9215	970.1429	60.6339		
	1.013	1100.857	68.8036		
120	0.97365	1037.393	64.8371	63.1106	1.5313
	0.94835	1001.25	62.5781		
	0.94094	990.6643	61.9165		
180	0.958224	1012.141	63.2588	61.8836	1.3434
	0.94208	989.0786	61.8174		
	0.92816	969.1929	60.5746		
300	1.04125	1132.75	70.7969	65.1421	5.3103
	0.96925	1029.893	64.3683		
	0.92325	964.1786	60.2612		
480	0.97847	1044.707	65.2942	64.0162	1.2844
	0.9497	1003.607	62.7254		
	0.9643	1024.464	64.0290		
720	0.98442	1047.957	65.4973	64.2443	1.1550
	0.9678	1024.214	64.0134		
	0.95894	1011.557	63.2223		

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
1440	0.988975	1054.071	65.8795	65.2232	0.6255
	0.980875	1042.5	65.1562		
	0.975025	1034.143	64.6339		
2160	0.9843	1047.607	65.4754	65.1689	0.4853
	0.9746	1033.75	64.6094		
	0.9837	1046.75	65.4219		
2880	0.978	1037.786	64.8616	64.6205	0.8000
	0.9826	1044.357	65.2723		
	0.9653	1019.643	63.7277		
3600	0.9923	1066.429	66.6518	64.9077	1.5882
	0.9575	1016.714	63.5446		
	0.9685	1032.429	64.5268		
4320	1.0027	1078.143	67.3839	65.4970	2.8608
	0.9973	1070.429	66.9018		
	0.9447	995.2857	62.2054		

Table B23 Releasing of sericin of 25:75:100 CLWK:CTWK:SRC in 0.1%w/v lysozyme in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g}/\text{ml}$)	%Protein Releasing	Average	SD
10	0.4730	320.4072	20.0254	20.1612	0.3930
	0.4710	317.6643	19.8540		
	0.4794	329.6643	20.6040		
20	0.4729	322.8286	20.1768	21.3143	1.1867
	0.4846	339.5429	21.2214		
	0.4994	360.7143	22.5446		
30	0.5134	386.7286	24.1705	23.6396	1.2817
	0.4910	354.8428	22.1777		
	0.5178	393.1285	24.5705		
45	0.6286	551.7785	34.4862	28.3653	5.4778
	0.5413	426.9786	26.6862		
	0.5103	382.7786	23.9237		
60	0.5897	492.0000	30.7500	28.1756	2.6359
	0.5307	407.7143	25.4821		
	0.5623	452.7143	28.2946		
90	0.5837	487.6428	30.4777	30.0610	2.4376
	0.5498	439.0715	27.4420		
	0.6038	516.2143	32.2634		
120	0.6351	553.7643	34.6103	30.8103	8.9245
	0.4784	329.8357	20.6147		
	0.6642	595.2929	37.2058		
180	0.5946	492.7357	30.7960	30.8460	0.6479
	0.5882	483.5929	30.2246		
	0.6027	504.2786	31.5174		
300	0.6215	533.1071	33.3192	32.0469	1.2723
	0.6073	512.7500	32.0469		
	0.5930	492.3929	30.7746		
480	0.6028	508.0071	31.7504	33.2692	1.6098
	0.6387	559.3072	34.9567		
	0.6179	529.6071	33.1004		
720	0.6351	548.9857	34.3116	34.9813	0.8960
	0.6387	554.1286	34.6330		
	0.6540	575.9857	35.9991		

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
1440	0.6355	549.1428	34.3214	35.0781	2.3531
	0.6229	531.1428	33.1964		
	0.6736	603.4643	37.7165		
2160	0.6631	588.7500	36.7969	35.1302	1.9036
	0.6490	568.6071	35.5379		
	0.6212	528.8929	33.0558		
2880	0.6402	555.2143	34.7009	35.1592	0.6245
	0.6533	573.9286	35.8705		
	0.6425	558.5000	34.9062		
3600	0.6227	538.4286	33.6518	36.4077	2.4991
	0.6773	616.4286	38.5268		
	0.6607	592.7143	37.0446		
4320	0.6651	595.8571	37.2411	36.1131	1.4665
	0.6584	586.2857	36.6429		
	0.6339	551.2857	34.4554		

Table B24 Releasing of sericin of 0:100:100 CLWK:CTWK:SRC in 0.1%w/v lysozyme in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.4590	300.5214	18.7826	20.8183	2.4220
	0.5118	375.9500	23.4969		
	0.4746	322.8072	20.1754		
20	0.5222	393.2571	24.5786	21.8065	2.4241
	0.4794	332.1143	20.7571		
	0.4718	321.3428	20.0839		
30	0.5110	383.3000	23.9562	23.6063	0.4341
	0.5016	369.9286	23.1205		
	0.5086	379.8715	23.7420		
45	0.6202	539.7500	33.7344	31.3499	2.1247
	0.5857	490.5214	30.6576		
	0.5745	474.5214	29.6576		
60	0.5865	487.3571	30.4598	31.3527	1.9255
	0.6213	537.0000	33.5625		
	0.5818	480.5714	30.0357		
90	0.5560	448.0000	28.0000	32.2485	4.7347
	0.6607	597.6429	37.3527		
	0.5940	502.2857	31.3929		
120	0.6183	529.8071	33.1129	31.5876	1.3518
	0.5959	497.7928	31.1121		
	0.5895	488.6072	30.5379		
180	0.6017	502.7929	31.4246	30.8841	1.4592
	0.6081	511.9357	31.9960		
	0.5771	467.7072	29.2317		
300	0.6127	520.6071	32.5379	34.1897	1.5355
	0.6468	569.1786	35.5737		
	0.6342	551.3214	34.4576		
480	0.6274	543.2500	33.9531	32.3516	1.3893
	0.6015	506.1214	31.6326		
	0.5996	503.5072	31.4692		
720	0.5838	475.7000	29.7312	30.6795	1.3863
	0.5873	480.5857	30.0366		
	0.6123	516.3286	32.2705		

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
1440	0.6262	535.7857	33.4866	31.2165	2.0845
	0.5958	492.3929	30.7746		
	0.5803	470.2143	29.3884		
2160	0.5924	487.7500	30.4844	31.4100	0.8016
	0.6080	510.0357	31.8772		
	0.6079	509.8928	31.8683		
2880	0.5757	463.0714	28.9420	30.6801	1.9971
	0.5902	483.7857	30.2366		
	0.6196	525.7857	32.8616		
3600	0.6051	513.2857	32.0804	32.1429	0.6941
	0.5984	503.7143	31.4821		
	0.6139	525.8572	32.8661		
4320	0.6033	507.5714	31.7232	32.4405	0.7057
	0.6191	530.1429	33.1339		
	0.6116	519.4286	32.4643		

Table B25 Releasing of sericin of 75:25:100 CLWK:CTWK:SRC in 0.01%w/v NaCl in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration ($\mu\text{g/ml}$)	%Protein Releasing	Average	SD
10	0.6773	707.7143	44.2321	47.1012	3.5438
	0.6972	736.1429	46.0089		
	0.7538	817.0000	51.0625		
20	0.6847	718.2857	44.8929	46.8095	3.8012
	0.6786	709.5714	44.3482		
	0.7552	819.0000	51.1875		
30	0.7287	781.1429	48.8214	49.1012	4.3460
	0.6848	718.4286	44.9018		
	0.7820	857.2857	53.5804		
45	0.7881	866.0000	54.1250	53.3810	1.5023
	0.7908	869.8571	54.3661		
	0.7604	826.4286	51.6518		
60	0.8583	966.2857	60.3929	52.2083	7.1646
	0.7091	753.1429	47.0714		
	0.7325	786.5714	49.1607		
90	0.7761	848.8571	53.0536	53.7857	1.7526
	0.7701	840.2857	52.5179		
	0.8067	892.5714	55.7857		
120	0.8696	982.4286	61.4018	64.4464	4.3571
	0.9596	1111.0000	69.4375		
	0.8819	1000.0000	62.5000		
180	0.8828	1001.2857	62.5804	68.7024	5.5818
	1.0052	1176.1429	73.5089		
	0.9661	1120.2857	70.0179		
300	0.9794	1139.2857	71.2054	70.3482	2.6936
	0.9940	1160.1429	72.5089		
	0.9360	1077.2857	67.3304		
480	0.9810	1141.5714	71.3482	71.8393	0.4337
	0.9883	1152.0000	72.0000		
	0.9902	1154.7143	72.1696		
720	0.9419	1085.7143	67.8571	71.2381	3.2124
	1.0135	1188.0000	74.2500		
	0.9839	1145.7143	71.6071		
1440	0.9874	1150.7143	71.9196	72.0982	1.9526
	1.0122	1186.1429	74.1339		
	0.9686	1123.8571	70.2411		

Table B26 Releasing of sericin of 75:25:100 CLWK:CTWK:SRC in 0.1%w/v NaCl in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.7524	815.0000	50.9375	51.9405	2.5918
	0.7966	878.1429	54.8839		
	0.7419	800.0000	50.0000		
20	0.7344	789.2857	49.3304	52.8720	7.1147
	0.7220	771.5714	48.2232		
	0.8658	977.0000	61.0625		
30	0.7856	862.4286	53.9018	55.9702	4.7647
	0.7709	841.4286	52.5893		
	0.8698	982.7143	61.4196		
45	0.7537	816.8571	51.0536	55.8304	5.5210
	0.7930	873.0000	54.5625		
	0.8749	990.0000	61.8750		
60	0.8604	969.2857	60.5804	61.3810	3.4411
	0.9116	1042.4285	65.1518		
	0.8361	934.5714	58.4107		
90	0.9080	1037.2857	64.8304	67.5714	3.2250
	0.9296	1068.1428	66.7589		
	0.9785	1138.0000	71.1250		
120	0.9157	1048.2857	65.5179	67.5208	2.3138
	0.9322	1071.8571	66.9911		
	0.9665	1120.8571	70.0536		
180	0.9835	1145.1429	71.5714	68.8065	4.3407
	0.8965	1020.8571	63.8036		
	0.9776	1136.7143	71.0446		
300	0.9469	1092.8571	68.3036	69.9256	1.4809
	0.9689	1124.2857	70.2679		
	0.9794	1139.2857	71.2054		
480	0.9546	1103.8572	68.9911	71.1726	3.8173
	0.9541	1103.1428	68.9464		
	1.0284	1209.2857	75.5804		
720	1.0107	1184.0000	74.0000	72.0565	6.3908
	0.9090	1038.7143	64.9196		
	1.0471	1236.0000	77.2500		
1440	0.9698	1125.5714	70.3482	73.3720	4.2788
	0.9827	1144.0000	71.5000		
	1.0585	1252.2857	78.2679		

Table B27 Releasing of sericin of 75:25:100 CLWK:CTWK:SRC in 0.5%w/v NaCl in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.8405	940.8572	58.8036	61.8393	3.5791
	0.8643	974.8571	60.9286		
	0.9187	1052.5714	65.7857		
20	0.9357	1076.8572	67.3036	65.5565	3.0880
	0.8762	991.8571	61.9911		
	0.9365	1078.0000	67.3750		
30	0.8985	1023.7143	63.9821	68.5565	4.2802
	0.9572	1107.5714	69.2232		
	0.9935	1159.4286	72.4643		
45	0.8910	1013.0000	63.3125	70.2708	6.5310
	0.9797	1139.7143	71.2321		
	1.0361	1220.2857	76.2679		
60	1.0893	1296.2857	81.0179	74.5774	5.7805
	0.9641	1117.4286	69.8393		
	0.9981	1166.0000	72.8750		
90	0.9996	1168.1429	73.0089	74.3571	4.1798
	1.0672	1264.7143	79.0446		
	0.9773	1136.2857	71.0179		
120	1.0327	1215.4286	75.9643	76.4583	6.1845
	1.1101	1326.0000	82.8750		
	0.9719	1128.5714	70.5357		
180	1.1267	1349.7143	84.3571	79.4405	4.7196
	1.0669	1264.2858	79.0179		
	1.0213	1199.1429	74.9464		
300	1.0786	1281.0000	80.0625	79.5536	0.5089
	1.0729	1272.8572	79.5536		
	1.0672	1264.7143	79.0446		
480	1.0792	1281.8571	80.1161	80.2946	0.2362
	1.0802	1283.2857	80.2054		
	1.0842	1289.0000	80.5625		
720	1.0591	1253.1429	78.3214	80.8274	2.4404
	1.0887	1295.4286	80.9643		
	1.1137	1331.1429	83.1964		
1440	1.0981	1308.8571	81.8036	81.1518	2.1168
	1.0643	1260.5714	78.7857		
	1.1100	1325.8571	82.8661		

Table B28 Releasing of sericin of 25:75:100 CLWK:CTWK:SRC in 0.01%w/v NaCl in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.4302	354.7143	22.1696	25.8988	3.4844
	0.5075	465.1428	29.0714		
	0.4782	423.2857	26.4554		
20	0.4651	404.5714	25.2857	26.8661	3.5141
	0.5279	494.2857	30.8929		
	0.4554	390.7143	24.4196		
30	0.4651	404.5714	25.2857	26.8661	3.5141
	0.5279	494.2857	30.8929		
	0.4554	390.7143	24.4196		
45	0.4581	394.5714	24.6607	27.9851	6.2753
	0.5764	563.5714	35.2232		
	0.4515	385.1428	24.0714		
60	0.4785	423.7143	26.4821	31.6399	5.2856
	0.5968	592.7143	37.0446		
	0.5335	502.2857	31.3929		
90	0.5860	577.2857	36.0804	37.5952	1.6203
	0.6221	628.8571	39.3036		
	0.6008	598.4286	37.4018		
120	0.6479	665.7143	41.6071	41.1786	1.1677
	0.6283	637.7143	39.8571		
	0.6531	673.1428	42.0714		
180	0.6470	664.4286	41.5268	43.4345	2.1353
	0.6942	731.8572	45.7411		
	0.6639	688.5714	43.0357		
300	0.6545	675.1428	42.1964	43.2054	1.1781
	0.6626	686.7143	42.9196		
	0.6803	712.0000	44.5000		
480	0.6579	680.0000	42.5000	43.1071	2.5460
	0.6402	654.7143	40.9196		
	0.6960	734.4286	45.9018		
720	0.6795	710.8571	44.4286	43.1786	1.1516
	0.6629	687.1429	42.9464		
	0.6541	674.5714	42.1607		
1440	0.6511	670.2857	41.8929	43.0268	1.1962
	0.6625	686.5714	42.9107		
	0.6778	708.4286	44.2768		

Table B29 Releasing of sericin of 25:75:100 CLWK:CTWK:SRC in 0.1%w/v NaCl in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.6662	691.8571	43.2411	46.7054	4.0219
	0.7544	817.8571	51.1161		
	0.6944	732.1428	45.7589		
20	0.8189	910.0000	56.8750	48.7917	7.3315
	0.7075	750.8571	46.9286		
	0.6587	681.1429	42.5714		
30	0.7206	769.5714	48.0982	49.0357	1.6393
	0.7204	769.2857	48.0804		
	0.7523	814.8571	50.9286		
45	0.7074	750.7143	46.9196	49.3780	5.7232
	0.6892	724.7143	45.2946		
	0.8082	894.7143	55.9196		
60	0.7868	864.1429	54.0089	52.9583	0.9550
	0.7659	834.2857	52.1429		
	0.7724	843.5714	52.7232		
90	0.8170	907.2857	56.7054	58.5238	4.3363
	0.8928	1015.5714	63.4732		
	0.8023	886.2857	55.3929		
120	0.9380	1080.1429	67.5089	62.3393	4.8384
	0.8306	926.7143	57.9196		
	0.8717	985.4286	61.5893		
180	0.9241	1060.2857	66.2679	65.5060	1.1464
	0.9218	1057.0000	66.0625		
	0.9008	1027.0000	64.1875		
300	0.9085	1037.9571	64.8723	65.5792	0.6148
	0.9210	1055.8428	65.9902		
	0.9197	1054.0000	65.8750		
480	0.9207	1055.4286	65.9643	65.5923	0.7391
	0.9219	1057.1428	66.0714		
	0.9070	1035.8571	64.7411		
720	0.9253	1061.9429	66.3714	67.4842	3.3929
	0.9804	1140.7000	71.2938		
	0.9075	1036.6000	64.7875		
1440	0.9469	1092.8571	68.3036	67.3333	1.2003
	0.9210	1055.8571	65.9911		
	0.9402	1083.2857	67.7054		

Table B30 Releasing of sericin of 25:75:100 CLWK:CTWK:SRC in 0.5%w/v NaCl in 0.1M tris-HCl buffer

Time (min)	Absorbance at 562 nm	Protein Concentration (μ g/ml)	%Protein Releasing	Average	SD
10	0.7184	766.4286	47.9018	49.9613	4.8572
	0.7024	743.5714	46.4732		
	0.8036	888.1429	55.5089		
20	0.8320	928.7143	58.0446	53.8065	3.9040
	0.7757	848.2857	53.0179		
	0.7459	805.7143	50.3571		
30	0.8950	1018.7143	63.6696	58.8720	6.4530
	0.7591	824.5714	51.5357		
	0.8697	982.5714	61.4107		
45	0.7684	837.8572	52.3661	59.4018	6.0982
	0.8838	1002.7143	62.6696		
	0.8894	1010.7143	63.1696		
60	0.8642	974.7143	60.9196	61.5625	2.1019
	0.8977	1022.5714	63.9107		
	0.8523	957.7143	59.8571		
90	0.9308	1069.8571	66.8661	65.2024	3.4777
	0.8674	979.2857	61.2054		
	0.9383	1080.5714	67.5357		
120	0.9534	1102.1428	68.8839	66.8512	1.7954
	0.9153	1047.7143	65.4821		
	0.9232	1059.0000	66.1875		
180	0.9311	1070.2857	66.8929	67.7173	1.4824
	0.9304	1069.2857	66.8304		
	0.9595	1110.8572	69.4286		
300	0.9696	1125.2857	70.3304	68.8512	2.5543
	0.9200	1054.4285	65.9018		
	0.9695	1125.1429	70.3214		
480	0.9953	1161.9642	72.6228	69.0305	3.3544
	0.9490	1095.8214	68.4888		
	0.9209	1055.6786	65.9799		
720	0.9613	1113.4286	69.5893	68.8571	1.3383
	0.9622	1114.7143	69.6696		
	0.9358	1077.0000	67.3125		
1440	0.9408	1084.1429	67.7589	69.7381	1.7303
	0.9767	1135.4286	70.9643		
	0.9714	1127.8571	70.4911		

CURRICULUM VITAE

Name: Ms. Pimnattha Ang-atikarnkul

Date of Birth: December 25, 1986

Nationality: Thai

University Education:

2005–2008 Bachelor Degree of Science in Materials Science, Faculty of Science, Chulalongkorn University, Bangkok, Thailand

Proceedings:

1. Ang-atikarnkul, P.; Watthanaphanit, A.; Weder, C.; and Rujiravanit, R. (2011, April 26th) Preparation and Characterization of Cellulose Whisker/ Chitin Whisker/ Silk Sericin Bionanocomposite Sponges for Wound Dressing Application. Proceedings of The 2nd Research Symposium on Petroleum, Petrochemicals, and Advanced Materials and The 17th PPC Symposium on Petroleum, Petrochemicals, and Polymers, Bangkok, Thailand.

Presentations:

1. Ang-atikarnkul, P.; Watthanaphanit, A.; Weder, C.; and Rujiravanit, R. (2011, April 26th) Preparation and Characterization of Cellulose Whisker/ Chitin Whisker/ Silk Sericin Bionanocomposite Sponges for Wound Dressing Application. Poster presented at The 2nd Research Symposium on Petroleum, Petrochemicals, and Advanced Materials and The 17th PPC Symposium on Petroleum, Petrochemicals, and Polymers, Bangkok, Thailand.