## REFERENCE

- Amick, J.A. Purification of rice hulls as a source of solar grade silicon for solar cells. <u>J. Electrochem. Soc.</u> 129 (April 1982): 864-866.
- Amick, J.A., Milewski, J.V., and Wright, F.J. Method for producing solar cell-grade silicon from rice hulls. <u>U.S. Patent</u> 4,214,920 (1980).
- Banerjee, H.D., Sen, S., and Acharya, H.N. Investigations on the production of silicon from rice husk by the magnesium method.

  Mater. Sci. Eng. 52 (1982): 173-179.
- Borthakur, P.C., Saikia, P.C., and Dutta, S.N. Physico chemical characteristics of silica from paddy husk, its reactivity and probable field of application. <u>Indian Ceram.</u> 23 (May 1980): 25-29.
- Bose, D.N., Govindacharyulu, P.A., and Banerjee, H.D. Large grain polycrystalline silicon from rice husk. Sol. Energy Mater. 7 (1982): 319-321.
- Brett, C., and Waldron, K. <u>Physiology and biochemistry of plant cell</u> walls. London: Unwin Hyman, 1990.
- Coyle, T.D. Silica (Introduction). <u>Encyclopedia of Chemical Technology</u>
  (Kirk-Othmer) 3 rd ed. 20 (1982): 748-766.
- Cremer, W. High-tech wet grinding for new and classic ceramic products. Ceramic Forum International: special reprint. 65 (1988).

- Chakraverty, A., Mishra, P., and Banerjee, H.D. Investigation of combustion of raw and acid-leached rice husk for production of pure amorphous white silica. <u>J. Mat. Sci.</u> 23 (1988): 21-24.
- Govindarao, V.M.H. Utilization of rice husk a preliminary analysis.

  J. Sci. Ind. Res. 39 (September 1980): 495-515.
- Hunt, L.P., Dismukes, J.P., Amick, J.A., Schei, A., and Larsen, K. Rice hulls as a raw material for producing silicon. <u>J. Electrochem.</u>

  <u>Soc.</u> 131 (1984): 1683-1686.
- Ibrahim, D.M., and Helmy, M. Crystallite growth of rice husk ash silica. Thermochim. Acta 45 (1981):79-85.
- Iler, R.V. The chemistry of silica. New York: John Wiley and Sons, 1979.
- James, J. and Rao, M.S., Characterization of silica in rice husk ash.

  Am. Ceram. Soc. Bull. 65 (August 1986): 1177-1180.
- Reactivity of rice husk ash. <u>Cem. Concr. Res.</u> 16 (1986): 67-73.
- \_\_\_\_\_\_, Silica from rice husk through thermal decomposition.

  Thermochim. Acta 97 (1986): 329-336.
- Jeffrey, D.W. <u>Soil-plant relationships: An ecological approach.</u>
  Portland (U.S.A.): Timber Press, 1987.
- Lee, J.G., and Cutler, J.B. Formation of silicon carbide from rice hulls. Am. Ceram. Soc. Bull. 54 (February 1975): 195-198.
- Matthes, W.E. <u>Keramische Glasuren. (Ceramic glazes)</u>. 2 nd ed. Augsburg: Augustus Verlag, 1990.

- Nakata, T., Suzuki, M., Okutani, T., Kikuchi, M., and Akiyama, T.

  Preparation and properties of SiO<sub>2</sub> from rice hulls. Nippon

  Ceramics Kyokai Gakujutsu-Ronbunshu 97 (1989): 842-849.
- Preeda Pimkhaokham, Conradt, R., Somsak Damronglerd. <u>Controlled</u>

  <u>preparation of high-grade silica from Thai rice husk by</u>

  <u>fluidized bed combustion</u>. Bangkok: Metallurgy and Materials

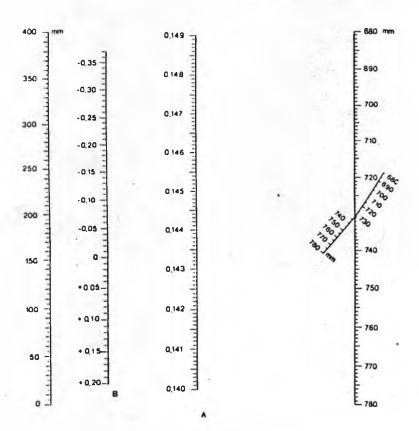
  Research Institute, Chulalongkorn University, 1991. (Research report).
- Rahman, I.A., and Riley, F.L. The control of morphology in silicon nitride powder prepared from rice husk. <u>J. Europ. Ceram. Soc.</u> 5 (1989): 11-22.
- Sacher, I., and Wien, A. Contributions to use of rice husks and rice husk ash in ceramics. <u>Sprechsaal</u> 121 (1988): 1081-1084.
- Sharma, N.K., Williams, W.S., and Zangvil, A. Formation and structure of silicon carbide whiskers form rice hulls. <u>J. Am. Ceram. Soc.</u> 67 (November 1984): 715-720.
- Willey, J.D. Amorphous silica. <u>Encyclopedia of Chemical Technology</u>
  (Kirk-Othmer) 3 rd ed. 20 (1982): 766-781.
- Xu, B.Y., Huang, W.E., Planigan, V.J., and Sitton, C.C. <u>Design and operation of a 6.0 inch fluidized bed gasifier for rice hulls</u>.
  Master's Thesis, Univ. of Missouri, Rolla, U.S.A. n.d.
- Yoshida, S., Ohnishi, Y., and Kitagishi, K. Chemical forms, mobility and deposition of silicon in rice plant. Soil Science and Plant Nutrition 8 (March 1962): 15-20.

APPENDICES

## Areameter-Nomogramm

In order to determine the factor A, find the measured value for the pressure difference on the outer left scale, and the atmospheric pressure on the outer right perpendicular scale, connect the two points by a straight line. The intersection with the A scale (third scale from left) determines the factor A.

In order to determine the factor B, find the atmospheric pressure on the outer right tilt scale, connect it to the pressure difference on the outer left scale by a straight line, and read the factor B form the intersection with the B scale (second scale from left).



Appendix B
Silica content of rice husk ash after different treatment

treatment .	individual tests *) means and precision	means and reproducability	K <sub>2</sub> O	
none	95.6	96.3±0.6		
	95.5			
	96.8		6000	
	96.5		7750	
	96.6		7450	
	96.9		8150	
HC1	99.0	99.37±0.15		
	99.4			
	99.14±0.24			
	99.4		1350	
	99.52±0.048		1400	
	99.5			
	99.5			
	99.37±0.016			
	99.35±0.052			
H <sub>2</sub> SO <sub>4</sub>	98.98±0.07	98.99±0.07	900	
	98.93 <u>+</u> 0.05		1100	
	99.06±0.11		< 60	
	98.96±0.02		< . 60	
	98.96+0.04			
	99.02±0.04			
HNO <sub>3</sub>	98.2	98.0±0.4	1900	
	98.4		1900	
	97.76±0.03			
	97.56±0.14			
NaOH	68.4±0.1	68.3 <u>+</u> 0.2		
	68.1±0.2			

<sup>\*)</sup> each individual test is based on 6 consecutive determinations:

± values are given for high-precision determinations only

## Vita

Miss Uraiwan Leela-Adisorn received her Bachelor Degree of Science in Materials Science (Ceramics) from Faculty of Science, Chulalongkorn University in 1989.

She began her master study in June 1989 and complete the programme in May 1992.