

Sulapha Peethamparan  
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### **Education**

Ph.D., Purdue University (2006)  
M.Eng., National University of Singapore, Singapore (2001)  
M.S., IIT Madras, India (1998)  
B.Tech., Mahatma Gandhi University, India (1993)

### **Teaching Interests**

Properties and performance of concrete materials, structural analysis, cement chemistry and special cements.

### **Research Interests**

Dr. Peethamparan's research, in a broader sense, investigate the behavior of the most commonly used construction material,— concrete for various applications. Her studies on the microstructural behavior of cement/concrete through advanced novel experimental techniques helped in elucidating the linkage between micro and macro structural behavior. Dr Peethamparan has studied various aspects of portland and oil well cement hydration, setting kinetics, early age microstructural developments in hydrating cementitious systems, development of sustainable construction materials by using industrial by-products such as cement kiln dust (CKD), fly ash, slag and silica fume. She has also investigated the various durability aspects of concrete such as carbonation of concrete, corrosion of steel in concrete, different forms of sulfate attacks and alkali silica reaction. Currently Dr peethamparan is working on CO<sub>2</sub> sequestration (using cement based materials) and on developing cement free binder concrete by alkali activation of fly ash and slag.

Dr Peethamparan is also interested in soil stabilization using cement kiln dust, lime, fly ash, and cement. One of the main focus areas of her study is interaction mechanism of different types of clays/soils and stabilizers. Her research also involve the potential of sulfate heaving due to ettringite formation in sulfate rich soils and soils stabilized with industrial wastes containing large amounts of sulfates. Currently she is working on developing controlled low strength concrete/flowable fills/ structural fills using cement kiln dusts.

### **Professional Experience**

Princeton University, Princeton, NJ - (2007-2008) Postdoctoral Research Assistant, Civil and Environmental Engineering, Hydration and setting kinetics of oil well cement.

Aquagen International, Singapore - (2000-2001) Research Engineer, High Performance Concrete Laboratories

Kerala State Electricity Board, India - (1993-1994) Sub-Engineer, Lower Periyar Hydro Electric Project

### **Professional Affiliations**

American Concrete Institute (ACI), Transportation Research Board (TRB), American Society for Testing and Materials (ASTM), American Society of Civil Engineers (ASCE), American Society of Engineering Education (ASEE), Women in Science and Engineering (WISE)

### **Publications**

Peethamparan, S. Olek, J., Diamond, S. "Mechanism of stabilization of Na-montmorillonite clay with cement kiln dust, Cement and Concrete Research, 39(2009) 2009, 580-589.

Peethamparan, S., Olek, J., and Lovell, J, "Influence of chemical and physical characteristic of cement kiln dusts (CKDs) on their hydration behavior and potential application in soil stabilization", Cement and Concrete Research, 38 (2008) 803–815.

Peethamparan, S., Olek, J., "A Study on the Effectiveness of Cement Kiln Dusts (CKDs) in Stabilizing Na-montmorillonite Clay", *The ASCE Journal of Materials in Civil Engineering*, (20) (2) (2008) 137-146

Peethamparan, S., Olek, J., and Diamond, S. "Physicochemical Behavior of Cement Kiln Dust Treated Kaolinite Clay", *Journal of Transportation Research Record – Geomaterials*, (2059)(2008), 80-88.

Sulapha, P., Wong, S. F., Wee, T. H., and Swaddiwudhipong, S., "Carbonation of concrete containing mineral admixtures," *Journal of Materials in Civil Engineering*, (15) (2) (2003) 134-143.

Olek, J and Peethamparan, S. "Cement Kiln Dusts and Their Hydration Products –A characterization Study" 12<sup>th</sup> International Congress on the Chemistry of cement, Canada, Montreal, July 8-13, 2007

Peethamparan, S., Olek, J., and Helfrich, K. E. (2006) "Evaluation of the Engineering Properties of Cement Kiln Dust (CKD) Modified Kaolinite Clay." The Twenty-First International Conference on Solid Waste Technology and Management, March 26-29, 2006, Philadelphia, Widener University, PA, pp. 997-1006

Sulapha Peethamparan Jan Olek and Sidney Diamond, "Physicochemical Behavior of Cement Kiln Dust Treated Kaolinite Clay", 87<sup>th</sup> Transportation Research Board Meeting, Jan 13-17, 2008

Wong, S. F., Sulapha, P., Wee, T. H., and Swaddiwudhipong, S., "Chloride ingress with and without carbonation in blended cement pastes," Third International Conference on Concrete under Severe Conditions of Environment and Loading, Vancouver, Canada, 18-20 June 2001, pp.546-555

#### **Publication under Review/ Preparation**

Sulapha Peethamparan, Emily Weissinger, Joe Vocaturro, Jie Zhang, George Scherer , "Monitoring Chemical Shrinkage and Hydration kinetics Using Pressure Sensors" ACI special publication

Gary P. Funkhouser, Sulapha Peethamparan, Emily Weissinger, Jie Zhang, and George Schere "Effect of pressure on early hydration" , International Summit on Cement Hydration Kinetics and Modeling, Quebec City, CA, July 27-29, 2009

George Scherer, John Quintanilla, Sulapha Peethamparan, Jie Zhang, Emily Weissinger, Salvatore Torquato, "Hydration and Percolation", International Summit on Cement Hydration Kinetics and Modeling, Quebec City, CA, July 27-29, 2009