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## David Rothstein, Ph.D., P.G.

### EDUCATION

1992-1997	Ph.D., Geology	University of California-Los Angeles
1988-1990	M.S., Geology	Northern Arizona University (Flagstaff)
1981-1985	B.S., Geology	University of Wisconsin-Madison

### PROFESSIONAL REGISTRATION

Registered Geologist	State of California No. 7168
Registered Geologist	State of Illinois No. 196-001060

### WORK EXPERIENCE

#### **President, DRP Consulting, Inc. (Boulder, Colorado)**

1999-present

- \* Principal of firm providing petrographic analysis and consultation for characterization of earth materials and performance of cement-based construction materials, aggregates and natural rock products.

#### **Post-Doctoral Research Fellow, Department of Civil Engineering, Northwestern University (Evanston, Illinois); 1999-2001**

- \* Research on durability, chemistry and microstructure of cement-based materials.

#### **Consultant in Concrete Technology (Santa Monica, California)**

1998-1999

- \* Consultant providing petrographic analysis of concrete and construction aggregate performance.

#### **Project Manager, Carlisle & Anderson, Inc. (Santa Monica, California)**

1997-1998

- \* Geologic exploration and evaluation of mineral and construction aggregate resources, southeastern California.

#### **Exploration Geologist, Touchstone Resources, World Wide Minerals, Inc., and Ontario Ltd., Inc. 1990-1997**

- \* Geologic, geochemical and geophysical exploration of epithermal gold-silver districts throughout Nevada.

### PROFESSIONAL SOCIETIES

**American Concrete Institute (ACI)** Member of national, Rocky Mountain and southern California Chapters. Committees on Durability (ACI 201), Aggregates (ACI 221); Materials Science of Concrete (ACI 236); and Plastering (ACI 524). 2005 President of Rocky Mountain Chapter; Co-Chair Fall 2006 National Convention.

**American Society of Testing and Materials (ASTM)** Member of committee C-09 on Cement and Concrete; and sub-committees C 09.20 (Aggregates); C 09.26 (Chemical Reactions); C 09.65 (Petrography), and C 09.69 (Miscellaneous Tests).

**International Concrete Repair Institute** Member since 2002.

**Mineralogical Society of America** Member since 1992.

**Geological Society of America** Member since 1988.

## **SELECTED PUBLICATIONS & PRESENTATIONS**

- Rothstein, D., 2007, Petrographic analysis for concrete pavements, *invited paper presented at the Colorado/Wyoming American Concrete Pavement Association, Greeley, Colorado.*
- Rothstein, D., 2007, Using petrography to evaluate construction defects, *invited paper presented at the Arizona Chapter American Concrete Institute, Phoenix, Arizona.*
- Rothstein, D. and Carrasquillo, R. L., 2006, Internal expansion mechanisms and damage in concrete: A case study, *Proceedings of the 28<sup>th</sup> International Conference on Cement Microscopy*, Denver, Colorado, p. 128-140.
- Rothstein, D., 2006, Petrography as a tool for investigating and troubleshooting concrete in service: Case Studies, *invited paper presented at the Congreso Puertorriqueño del Hormigón*, San Juan, Puerto Rico.
- Rothstein, D., Kachlakev, D., and Pal, N., 2005, Plaster durability in pool environments, *Proceedings of the 27<sup>th</sup> International Conference on Cement Microscopy*, Victoria, British Columbia.
- Rothstein, D., Carrasquillo, R. L., Garner, A., and Baykal, M., 2004, Case Study of Cracking in Architectural Precast Concrete, *invited paper presented at ACI 201 (Durability) Technical Session*, ACI Fall Convention, San Francisco.
- Garner, A., Carrasquillo, R. L., and Rothstein, D., 2004, Investigations of Alkali Silica Reaction (ASR) in Residential Foundations, *Proceedings of the Texas State Conference of the American Society of Civil Engineers*, South Padre Island, Texas.
- Rothstein, D. A., and Manning, C. E., 2003, Geothermal gradients in continental magmatic arcs: Constraints from the eastern Peninsular Ranges batholith, Baja California, Mexico, *in Johnson, W. E., Paterson, S. R., Fletcher, J. M., Girty, G. H., Kimbrough, D. L., and Martin-Barajas, A., editors, Tectonic evolution of northwestern Mexico and the southwestern USA*: Boulder, Geological Society of America, p. 337-354.
- Thomas, J. J., Rothstein, D., Jennings, H. M., and Christensen, B. J., 2003, Effect of hydration temperature on the solubility behavior of Ca-, S-, Al-, and Si-bearing solid phases in Portland cement pastes: *Cement and Concrete Research*, Vol. 33, p. 2037-2047.
- Rothstein, D., 2003, Role of petrographic examination in evaluating durability of concrete in sulfate environments, *invited paper presented at 2003 Colorado Concrete Conference*, Denver, Colorado.
- Jennings, H. M., Thomas, J. J., Rothstein, D., and Chen, J. J., 2002, "Cement Paste as a Porous Material," *in Handbook of Porous Solids* [Chapter 6.11], edited by F. Schuth, K. Sing, and J. Weitkamp; H.M. Wiley-VCH, 5, p. 2971-3028.
- Rothstein, D., 2002, Residential Sulfate Attack Litigation in California, *invited paper presented at Rocky Mountain Chapter of the American Concrete Institute*, Denver, Colorado.
- Rothstein, D., Thomas, J.J., Christensen, B.J., and Jennings, H.M., 2002, Solubility behavior of Ca, S, Al- and Si-bearing solid phases in Portland cement pore solutions as a function of hydration time, *Cement and Concrete Research*, Vol. 32, p. 1663-1671.

- Rothstein, D., 2001, Geochemical characterization of efflorescent mineralization, *invited paper presented at semi-annual meeting of the American Concrete Institute*, session on Physical Salt Attack, Dallas, Texas.
- Rothstein, D., Thomas, J. J., Christensen, B. J., and Jennings, H. M., 2001, Pore solution chemistry of Portland cement pastes: Influence of temperature on the system CaO-Na<sub>2</sub>O-K<sub>2</sub>O-Al<sub>2</sub>O<sub>3</sub>-SO<sub>4</sub>-H<sub>2</sub>O, [abstract], American Ceramic Society Bulletin, Vol. 80, No. 4, p. 182.
- Rothstein, D., Chen, J. J., Thomas, J. J., and Jennings, H. M., 2001, Early measurement of concrete deterioration by the deformation mapping technique, *Proceedings of the Third International Conference on Concrete Under Severe Conditions*, Banthia, N., Sakai, K., and Gjorv, O.E. [eds.], University of British Columbia, Vancouver, Canada, p. 1530-1537.
- Ray, J.A. and Rothstein, D., 2001, Applications of chemical petrography to assessing concrete durability—A review, *invited paper presented at the Transportation Research Board Annual Meeting*, Washington, D.C.
- Chen, J. J., Rothstein, D., Thomas, J. J., and Jennings, H. M., 2001, *Application of the Deformation Mapping Technique to Assess Deterioration in Cement-based Materials*: Journal of the Transportation Research Board, v. 1775, p. 28-35.
- Rothstein, D., Thomas, J. J., Christensen, B. J., and Jennings, H. M., 2000, Pore solution chemistry in mature Portland cement pastes [abstract], American Ceramic Society Bulletin, v. 79, No. 4, p. 292.
- Chen, J. J., Rothstein, D., Thomas, J. J., and Jennings, H. M., 2000, A novel technique for quantifying damage in cementitious materials [abstract], 102<sup>nd</sup> Annual Meeting of the American Ceramic Society, p. 296.
- Rothstein, D. A., Grove, M., and Manning, C. E., 1995, Role of the Main Gulf Escarpment in the denudation of the east-central Peninsular Ranges batholith, Baja California, Mexico: Insights from high resolution <sup>40</sup>Ar/<sup>39</sup>Ar thermochronology: [abstract] Fall Meeting of the American Geophysical Union.
- Rothstein, D. A., and Manning, C. E., 1995, Compositional variations in metamorphic rocks from different crustal levels in the eastern Peninsular Ranges batholith, Baja California, Mexico: [abstract] Third International Meeting on the Geology of the Baja California Peninsula, La Paz, Baja California Mexico.
- Rothstein, D. A., Karlstrom, K. E., Hoisch, T. D., and Morrison, J., 1994, Synkinematic contact metasomatism: implications for the timing of pluton emplacement and regional deformation in the Scanlon shear zone, south-eastern California, *Journal of Metamorphic Geology*, v. 12, p. 709-721.
- Rothstein, D. A., and Hoisch, T. D., 1994, Multiple intrusions and low-pressure metamorphism in the central Old Woman Mountains, southeastern California: constraints from thermal modelling, *Journal of Metamorphic Geology*, v. 12, p. 723-734.
- Rothstein, D., 1995, Instructor's Resource Manual for Judson, S., and Richardson, S. M., *Earth: An Introduction to Geologic Change*: Englewood Cliffs, New Jersey, Prentice-Hall, 89 p.
- Anderson, R. S., Smith, S., Rothstein, D., Murray, L., Hadly, E., Force, C., and Dively-White, S., 1989, The Mid- and Late-Wisconsin pollen stratigraphy of Potato Lake, Coconino County, Arizona: Current Research in the Pleistocene, v. 6, p. 51-54.