

REFEREED JOURNAL PAPERS

Goetz, W., Hecht, M.H., Hviid, S.F., Madsen, M.B., Pike, W.T., Stauffer, U., Velbel, M.A., Harrit, N.H., Zych, E., and Edgett, K.S., 2012. Search for ultraviolet luminescence of soil particles at the Phoenix landing site, Mars. *Planetary and Space Science*, v. 70, p. 134-147. <http://dx.doi.org/10.1016/j.pss.2012.05.002>.

Velbel, M.A., Tonui, E.K., and Zolensky, M.E., 2012. Replacement of olivine by serpentine in the carbonaceous chondrite Nogoya (CM2). *Geochimica et Cosmochimica Acta*, v. 87, p. 117-135. <http://dx.doi.org/10.1016/j.gca.2012.03.016>.

Sanders, N.E., and Velbel, M.A., 2012. The size distributions of nanoscale Fe-Ni-S droplets in Stardust melted grains from comet 81P/Wild 2. *Meteoritics and Planetary Science* (Timber Cove III special issue), v. 47, p. 594–612. doi: 10.1111/j.1945-5100.2012.01352.x

Velbel, M.A., and Palmer, E.E., 2011. Fine-grained serpentine in CM2 carbonaceous chondrites and its implications for the extent of aqueous alteration on the parent body: A review. *Clays and Clay Minerals*, v. 59, p. 416-432. doi: 10.1346/CCMN.2011.0590405

Losiak, A.I., and Velbel, M.A., 2011. Evaporite formation during the weathering of Antarctic meteorites – A weathering census analysis based on the ANSMET database. *Meteoritics and Planetary Science*, v. 46, p. 443-458. doi:j.1945-5100.2010.01166.x

Velbel, M.A., and Losiak, A.I., 2010. Denticles on chain silicate grain surfaces and their utility as indicators of weathering conditions on Earth and Mars. *Journal of Sedimentary Research*, v. 80, p. 771-780. DOI: 10.2110/jsr.2010.074

Velbel, M.A., 2009. Dissolution of olivine during natural weathering. *Geochimica et Cosmochimica Acta*, v. 73, p. 6098-6113. <http://dx.doi.org/10.1016/j.gca.2009.07.024>

Velbel, M.A., Donatelle, A.R., and Formolo, M.J., 2009. Reactant-product textures, volume relations, and implications for major-element mobility during natural weathering of hornblende, Tallulah Falls Formation, Georgia Blue Ridge, U.S.A. *American Journal of Science*, Special Issue on Chemical Weathering, v. 309, no. 10, p. 661-688, DOI 10.2475/08.2009.02.

Velbel, M.A., and Harvey, R.P., 2009. Along-track compositional and textural variation in extensively melted grains returned from Comet 81P/Wild 2 by the Stardust mission: Implications for capture-melting process. *Meteoritics and Planetary Science*, v. 44, p. 1519-1540.

Velbel, M.A., and Barker, W.W., 2008. Pyroxene weathering to smectite: Conventional and low-voltage cryo-field emission scanning electron microscopy, Koua Bocca ultramafic complex, Ivory Coast. *Clays and Clay Minerals*, v. 56, p. 111-126. doi:10.1346/CCMN.2008.0560110

Leroux, H., Rietmeijer, F.J.M., Velbel, M.A., Brearley, A.J., Jacob, D., Langenhorst, F., Bridges, J.C., Zega, T.J., Stroud, R.M., Cordier, P., Harvey, R.P., Lee, M., Gounelle, M., and Zolensky, M.E., 2008. A TEM study of thermally modified Comet 81P/Wild 2 dust particles by interactions with the aerogel matrix during the Stardust capture process. *Meteoritics and Planetary Science*, v. 43, p. 97-120.

Zolensky, M., Nakamura-Messenger, K., Rietmeijer, F., Leroux, H., Mikouchi, T., Ohsumi, K., Simon, S., Grossman, L., Stephan, T., Weisberg, M., Velbel, M., Zega, T., Stroud, R., Tomeoka, K., Ohnishi, I., Tomioka, N., Nakamura, T., Matrajt, G., Joswiak, D., Brownlee, D., Langenhorst, F., Krot, A., Kearsley, A., Ishii, H., Graham, G., Dai, Z.R., Chi, M., Bradley, J., Hagiya, K., Gounelle, M., and Bridges, J., 2008. Comparison of Wild-2 particles to chondrites and IDPs. *Meteoritics and Planetary Science*, v. 43, p. 261-272.

Publications of Michael A. Velbel, as of 01/04/2013, p. 2

Velbel, M.A., and Price, J.R., 2007. Solute geochemical mass-balances and mineral weathering rates in small watersheds: Methodology, recent advances, and future directions. *Applied Geochemistry*, v. 22, p. 1682-1700.

<http://dx.doi.org/doi:10.1016/j.apgeochem.2007.03.029>

Brownlee, D., Tsou, P., Aléon, J., Alexander, C.M.O'D., Araki, T., Bajt, S., Baratta, G.A., Bastien, R., Bland, P., Bleuét, P., Borg, J., Bradley, J.P., Brearley, A., Brenker, F., Brennan, S., Bridges, J.C., Browning, N.D., Brucato, J.R., Bullock, E., Burchell, M.J., Busemann, H., Butterworth, A., Chaussidon, M., Chevront, A., Chi, M., Cintala, M.J., Clark, B.C., Clemett, S.J., Cody, G., Colangeli, L., Cooper, G., Cordier, P., Daghlian, C., Dai, Z., D'Hendecourt, L., Djouadi, Z., Dominguez, G., Duxbury, T., Dworkin, J.P., Ebel, D.S., Economou, T.E., Fakra, S., Faurey, S.A.J., Fallon, S., Ferinni, G., Ferroir, T., Fleckenstein, H., Floss, C., Flynn, G., Franchi, I.A., Fries, M., Gainsforth, Z., Gallien, J.-P., Genge, M., Gilles, M.K., Gillet, P., Gilmour, J., Glavin, D.P., Gounelle, M., Grady, M.M., Graham, G.A., Grant, P.G., Green S.F., Grossemy, F., Grossman, L., Grossman, J.N., Guan, Y., Hagiya, K., Harvey, R., Heck, P., Herzog, G.F., Hoppe, P., Hörz, F., Huth, J., Hutcheon, I.D., Ignatyev, K., Ishii, H., Ito, M., Jacob, D., Jacobsen, C., Jacobson, S., Jones, S., Joswiak, D., Jurewicz, A., Kearsley, A.T., Keller, L.P., Khodja, H., Kilcoyne, A.L.D., Kissel, J., Krot, A., Langenhorst, F., Lanzirotti, A., Le, L., Leshin, L.A., Leitner, J., Lemelle, L., Leroux, H., Liu, M.-C., Luening, K., Lyon, I., MacPherson, G., Marcus, M.A., Marhas, K., Marty, B., Matrajt, G., McKeegan, K., Meibom, A., Mennella, V., Messenger, K., Messenger, S., Mikouchi, T., Mostefai, S., Nakamura, T., Nakano, T., Newville, M., Nittler, L.R., Ohnishi, I., Ohsumi, K., Okudaira, K., Papanastassiou, D.A., Palma, R., Palumbo, M.E., Pepin, R.O., Perkins, D., Perronnet, M., Pianetta, P., Rao, W., Rietmeijer, F.J.M., Robert, F., Rost, D., Rotundi, A., Ryan, R., Sandford, S.A., Schwandt, C.S., See, T.H., Schlutter, D., Sheffield-Parker, J., Simionovici, A., Simon, S., Sitnitsky, I., Snead, C.J., Spencer, M.K., Stademann, F.J., Steele, A., Stephan, T., Stroud, R., Susini, J., Sutton, S.R., Suzuki, Y., Taheri, M., Taylor, S., Teslich, N., Tomeoka, K., Tomioka, N., Toppani, A., Trigo-Rodríguez, J.M., Troadec, D., Tsuchiyama, A., Tuzzolino, A.J., Tyliczszak, T., Uesugi, K., Velbel, M., Vellenga, J., Vicenzi, E., Vincze, L., Warren, J., Weber, I., Weisberg, M., Westphal, A.J., Wirick, S., Wooden, D., Wopenka, B., Wozniakiewicz, P., Wright, I., Yabuta, H., Yano, H., Young, E.D., Zare, R.N., Zega, T., Ziegler, K., Zimmerman, L., Zinner, E., and Zolensky, M., 2006. Comet 81P/Wild 2 Under a Microscope. *Science*, v. 314, no. 5806, p. 1711-1716.

<http://dx.doi.org/doi:10.1126/science.1135840>

Zolensky, M.E., Zega, T.J., Yano, H., Wirick, S., Westphal, A.J., Weisberg, M.K., Weber, I., Warren, J.L., Velbel, M.A., Tsuchiyama, A., Tsou, P., Toppani, A., Tomioka, N., Tomeoka, K., Teslich, N., Taheri, M., Susini, J., Stroud, R., Stephan, T., Stadermann, F.J., Snead, C.J., Simon, S.B., Simionovici, A., See, T.H., Robert, F., Rietmeijer, F.J.M., Rao, W., Perronnet, M.C., Papanastassiou, D.A., Okudaira, K., Ohsumi, K., Ohnishi, I., Nakamura-Messenger, K., Nakamura, T., Mostefai, S., Mikouchi, T., Meibom, A., Matrajt, G., Marcus, M.A., Leroux, H., Lemelle, L., Le, L., Lanzirotti, A., Langenhorst, F., Krot, A., Keller, L.P., Kearsley, A., Joswiak, D., Jacob, D., Ishii, H., Harvey, R., Hagiya, K., Grossman, L., Grossman, J.N., Graham, G.A., Gounelle, M., Gillet, P., Genge, M.J., Flynn, G.J., Ferroir, T., Fallon, S., Ebel, D.S., Dai, Z.R., Cordier, P., Chi, M., Butterworth, A.L., Brownlee, D.E., Browning, N., Bridges, J.C., Brennan, S., Brearley, A., Bradley, J.P., Bland, P., and Bastien, R., 2006. Mineralogy and Petrology of Comet 81P/Wild 2 Nucleus Samples. *Science*, v. 314, no. 5806, p. 1735-1739. <http://dx.doi.org/doi:10.1126/science.1135842>

Schaetzl, R.J., Mikesell, L.R., and Velbel, M.A., 2006. Soil characteristics related to weathering and pedogenesis across a geomorphic surface of uniform age in Michigan. *Physical Geography*, v. 27, p. 170-188.

Price, J.R., Velbel, M.A., and Patino, L.C., 2005. Rates and timescales of clay-mineral formation by weathering in saprolitic regoliths of southern Appalachian Mountains from geochemical mass balance. *Geological Society of America Bulletin*, v. 117, no. 5, p. 783-794. doi:10.1130/B25547.1

Publications of Michael A. Velbel, as of 01/04/2013, p. 3

Wentworth, S.J., Gibson, E.K., Velbel, M.A., and McKay, D.S., 2005. Antarctic Dry Valleys and Indigenous Weathering in Mars Meteorites: Implications for Water and Life on Mars. *Icarus*, v. 174, p. 382-395. <http://dx.doi.org/doi:10.1016/j.icarus.2004.08.026>

Price, J.R., Velbel, M.A., and Patino, L.C., 2005. Allanite and epidote weathering at the Coweeta Hydrologic Laboratory, western North Carolina, USA. *American Mineralogist*, v. 90, no. 1, p. 101-114. doi:10.2138/am.2005.1444

Velbel, M.A., 2004. Laboratory and Homework Exercises in the Geochemical Kinetics of Mineral-Water Reaction: Rate Law, Arrhenius Activation Energy, and the Rate-Determining Step in the Dissolution of Halite. In: Drummond, C. (editor), "Teaching of Mineral Sciences in the 21st century". *Journal of Geoscience Education*, v. 52, p. 52-59.

Mikesell, L.R., Schaetzl, R.J., and Velbel, M.A., 2004. Hornblende etching and quartz/feldspar ratios as weathering and soil development indicators in some Michigan soils. *Quaternary Research*, v. 62, p. 162-171. <http://dx.doi.org/doi:10.1016/j.yqres.2004.06.006>

Patino, L.C., Velbel, M.A., Price, J.R., and Wade, J.A., 2003. Trace element mobility during spheroidal weathering of basalts and andesites in Hawaii and Guatemala. In: Anderson, S.P. and Blum, A.E. (editors), *Controls on Chemical Weathering*. *Chemical Geology*, v. 202, p. 343-364. <http://dx.doi.org/doi:10.1016/j.chemgeo.2003.01.002>

Price, J.R., and Velbel, M.A., 2003. Chemical weathering indices applied to weathering profiles developed on heterogeneous felsic metamorphic parent rocks. In: Anderson, S.P. and Blum, A.E. (editors), *Controls on Chemical Weathering*. *Chemical Geology*, v. 202, p. 397-416. <http://dx.doi.org/doi:10.1016/j.chemgeo.2002.11.001>

Velbel, M.A., Matty, D.J., Wacker, J.F., and Linke, M., 2002. The Worden meteorite: A new ordinary chondrite fall from Michigan, U.S.A. *Meteoritics and Planetary Science*, v. 37 (Supplement), p. B25-B29. DOI: 10.1111/j.1945-5100.2002.tb00900.x

McGuire, J.T., Smith, E.W., Long, D.T., Hyndman, D.W., Haack, S.K., Klug, M.J., Velbel, M.A., 2000. Temporal variations in parameters reflecting terminal-electron-accepting processes in an aquifer contaminated with waste fuel and chlorinated solvents. In *Geomicrobiology - Technical Session 06*. 110th Geological Society of America Annual Meeting, K. Konhauser and G. Southam (editors), *Chemical Geology*, v. 169, p. 471-485.

Price, J.R., and Velbel, M.A., 2000. Weathering of the Eaton Sandstone (Pennsylvanian), Grand Ledge, Michigan: Geochemical mass-balance and implications for reservoir properties beneath unconformities. *Journal of Sedimentary Research, A, Sedimentary Petrology and Processes*, v. 70, p. 1118-1128.

Velbel, M.A., 2000. Classroom index-card simulation of crystal growth. *Journal of Geoscience Education*, v. 48, p. 261-266.

Velbel, M.A., 1999. Bond strength and the relative weathering rates of simple orthosilicates. *American Journal of Science*, v. 299 (Berner volume), p. 679-696.

Osborn, W., Matty, D., Velbel, M., Brown, P., and Wacker, J., 1997. Fall and recovery of the Coleman chondrite and its associated fireball. *Meteoritics & Planetary Science*, v. 32, p. 781-790. DOI: 10.1111/j.1945-5100.1997.tb01569.x

Velbel, M.A., Basso, C.L., Jr., and Zieg, M.J., 1996. The natural weathering of staurolite: Crystal-surface textures, relative stability, and the rate-determining step. *American Journal of Science*, v. 296, p. 453-472.

Publications of Michael A. Velbel, as of 01/04/2013, p. 4

Velbel, M.A., 1993. Temperature dependence of silicate weathering in nature: How strong a negative feedback on long-term accumulation of atmospheric CO₂ and global greenhouse warming? *Geology*, v. 21, p. 1059-1062.

Velbel, M.A., 1993. Constancy of silicate-mineral weathering-rate ratios between natural and experimental weathering: Implications for hydrologic control of differences in absolute rates. In: Brantley, S.L., and Velbel, M.A. (editors), *Geochemical Kinetics of Mineral-Water Reactions in the Field and the Laboratory*. *Chemical Geology*, v. 105, p. 89-99. [http://dx.doi.org/doi:10.1016/0009-2541\(93\)90120-8](http://dx.doi.org/doi:10.1016/0009-2541(93)90120-8)

Velbel, M.A., 1993. Formation of protective surface layers during silicate-mineral weathering under well-leached, oxidizing conditions. *American Mineralogist*, v. 78, p. 408-417. http://www.minsocam.org/ammin/AM78/AM78_405.pdf

Velbel, M.A., 1992. Geochemical mass balances and weathering rates in forested watersheds of the southern Blue Ridge, III. Cation budgets and the weathering rate of amphibole. *American Journal of Science*, v. 292, p. 58-78.

Taylor, A.B. and Velbel, M.A., 1991. Geochemical mass balance and weathering rates in forested watersheds of the southern Blue Ridge. II. Effects of botanical uptake terms. In: Pavich, M.J. (editor), *Weathering and Soils*. *Geoderma*, v. 51, p. 29-50. [http://dx.doi.org/doi:10.1016/0016-7061\(91\)90065-2](http://dx.doi.org/doi:10.1016/0016-7061(91)90065-2)

Velbel, M.A., Long, D.T. and Gooding, J.L., 1991. Terrestrial weathering of Antarctic stone meteorites: Formation of Mg-carbonates on ordinary chondrites. *Geochimica et Cosmochimica Acta*, v. 55, p. 67-76.

Velbel, M.A., 1990. Influence of temperature and mineral surface characteristics on feldspar weathering rates in natural and artificial systems: A first approximation. *Water Resources Research*, v. 26, p. 3049-3053.

Fujita, K., Cambray, F.W. and Velbel, M.A., 1990. Tectonics of the Laptev Sea and Moma Rift systems, northeastern USSR. In: J.R. Weber, D.A. Forsyth, A.F. Embry, and S.M. Blasco (eds.), *Arctic Geoscience*. *Marine Geology*, v. 93, p. 95-118.

Velbel, M.A., 1989. Effect of chemical affinity on feldspar hydrolysis rates in two natural weathering systems. In: Schott, J., and Lasaga, A.C. (editors), *Kinetic Geochemistry*. *Chemical Geology*, v. 78, p. 245-253. [http://dx.doi.org/doi:10.1016/0009-2541\(89\)90061-2](http://dx.doi.org/doi:10.1016/0009-2541(89)90061-2)

Velbel, M.A., 1989. Weathering of hornblende to ferruginous products by a dissolution-reprecipitation mechanism: Petrography and stoichiometry. *Clays and Clay Minerals*, v. 37, p. 515-524. http://www.clays.org/journal/archive/volume_37/37-6-515.pdf
doi:10.1346/CCMN.1989.0370603

Salvino, J.F. and Velbel, M.A., 1989. Faceted garnets from sandstones of the Munising Formation (Cambrian), northern Michigan: Petrographic evidence for origin by intrastratal dissolution. *Sedimentology*, v. 36, p. 371-379.

Velbel, M.A. and Brandt, D.S., 1989. Differential preservation of brachiopod valves: Taphonomic bias in *Platystrophia ponderosa*. *Palaios*, v. 4, p. 193-195.

Jull, A.J.T., Cheng, S., Gooding, J.L., and Velbel, M.A., 1988. Rapid growth of magnesium-carbonate weathering products in a stony meteorite from Antarctica. *Science*, v. 242, p. 417-419.

Velbel, M.A., 1988. The distribution and significance of evaporitic weathering products on Antarctic meteorites. *Meteoritics*, v. 23, p. 151-159.

Publications of Michael A. Velbel, as of 01/04/2013, p. 5

Grantham, J.H., and Velbel, M.A., 1988. Influence of climate and topography on rock fragment abundance in modern fluvial sands of the southern Blue Ridge Mountains, North Carolina. *Journal of Sedimentary Petrology*, v. 58, p. 219-227.

Velbel, M.A., 1987. Alluvial-fan origin for terrace deposits of the southeast Prentiss Quadrangle, near Otto, North Carolina. *Southeastern Geology*, v. 28, p. 87-103.

Velbel, M.A., 1986. Influence of surface area, surface characteristics, and solution composition on feldspar weathering rates. In: Davis, J.A., and Hayes, K.F. (editors), *Geochemical Processes at Mineral Surfaces*, American Chemical Society, Symposium Series, No. 323, p. 615-634.

Velbel, M.A., 1985. Geochemical mass balances and weathering rates in forested watersheds of the southern Blue Ridge. *American Journal of Science*, v. 285, p. 904-930.

Velbel, M.A., 1985. Mineralogically Mature Sandstones in Accretionary Prisms. *Journal of Sedimentary Petrology*, v. 55, p. 685-690.

Velbel, M.A., 1984. Natural weathering mechanisms of almandine garnet. *Geology*, v. 12, p. 631-634.

Velbel, M.A., 1983. A dissolution-precipitation mechanism for the pseudomorphous replacement of plagioclase feldspars by clay minerals during weathering. In: Nahon, D., and Noack, Y. (editors), *Pédrologie des Altérations et des Sols, Volume I: Sciences Géologiques, Mémoires (Strasbourg)*, v. 71, p. 139-147.

Berner, R.A., Sjöberg, E.L., Velbel, M.A., and Krom, M.D., 1980. Dissolution of Pyroxenes and Amphiboles during Weathering. *Science*, v. 207, p. 1205-1206.

<http://dx.doi.org/doi:10.1126/science.207.4436.1205>

SPECIAL ISSUES & CONFERENCE VOLUMES EDITED

Brantley, S.L., and Velbel, M.A. (editors), 1993. *Geochemical Kinetics of Mineral-Water Reactions in the Field and the Laboratory: Chemical Geology*, v. 105, no. 1/3, p. 1-232.

REFEREED CHAPTERS / PAPERS IN EDITED VOLUMES

Velbel, M.A., 2012. Aqueous alteration in Martian meteorites: Comparing mineral relations in igneous-rock weathering of Martian meteorites and in the sedimentary cycle of Mars. In Grotzinger, J., and Milliken, R. (eds.) *Sedimentary Geology of Mars*, SEPM – Society for Sedimentary Geology Special Publication 102, p. 97-117.

Velbel, M.A., 2009. The “Lost Interval”: Michigan Geology from the Permian to the Pliocene. In Schaetzl, R.J., Darden, J.T., and Brandt, D.S., eds., *Michigan Geography and Geology*. Pearson Custom Publishing, Boston, MA, p. 60-68.

Velbel, M.A., 2007. Surface Textures and Dissolution Processes of Heavy Minerals in the Sedimentary Cycle: Examples from Pyroxenes and Amphiboles. In Mange, M., and Wright, D., eds., *Heavy Minerals in Use*. *Developments in Sedimentology* v. 58, p. 113-150.

[http://dx.doi.org/10.1016/S0070-4571\(07\)58004-0](http://dx.doi.org/10.1016/S0070-4571(07)58004-0)

Velbel, M.A., McGuire, J.T., and Madden, A.S., 2007. Scanning electron microscopy of garnet from southern Michigan soils: Etching rates and inheritance of pre-glacial and pre-pedogenic grain-surface textures. In Mange, M., and Wright, D., eds., *Heavy Minerals in Use*. *Developments in Sedimentology* v. 58, p. 413-432. [http://dx.doi.org/10.1016/S0070-4571\(07\)58015-5](http://dx.doi.org/10.1016/S0070-4571(07)58015-5)

Publications of Michael A. Velbel, as of 01/04/2013, p. 6

Velbel, M.A., 1997. Exercises in the geochemical kinetics of mineral-water reactions: The rate law and rate-determining step in the dissolution of halite. In Teaching Mineralogy (Brady, J.B., Mogk, D.W., and Perkins, D., III, eds.), Mineralogical Society of America, Washington, D.C., p. 119-130. Available online at <http://serc.carleton.edu/NAGTWorkshops/mineralogy/activities/geochemkinetics.html>

Velbel, M.A., 1997. Miller indices & symmetry content: A demonstration, using SHAPE: A computer program for drawing crystals. In Teaching Mineralogy (Brady, J.B., Mogk, D.W., and Perkins, D., III, eds.), Mineralogical Society of America, Washington, D.C., p. 175-185. Available online at <http://serc.carleton.edu/NAGTWorkshops/mineralogy/activities/SHAPESymmetry.html>

Velbel, M.A., and Saad, M.K., 1991. Paleoweathering or diagenesis as the principal modifier of sandstone framework composition? A case study, from some Triassic rift-valley redbeds of eastern North America. In: Morton, A.C., et al. (editors), Developments in Sedimentary Provenance Studies, Geological Society of London Special Publication no. 57, p. 91-99.

Velbel, M.A., 1986. The mathematical basis for determining rates of geochemical and geomorphic processes in small forested watersheds by mass balance: Examples and implications. In: Colman, S.M., and Dethier, D.P. (editors) Rates of Chemical Weathering of Rocks and Minerals, Academic Press, Orlando, Florida, p. 439-451.

Velbel, M.A., 1985. Hydrogeochemical constraints on mass balances in forested watersheds of the southern Appalachians. In: Drever, J.I. (editor), The Chemistry of Weathering, D. Reidel, Holland, p. 231-247.

NON-REFEREED CONFERENCE, SYMPOSIUM & REVIEW PAPERS

Losiak, A., and Velbel, M.A., 2012. Limitations on information retrievable from Antarctic meteorites due to influence of terrestrial weathering. Mineralogia - Special Papers, v. 40, p. 39-41.

Velbel, M.A., 2011. Microdenticles on naturally weathered hornblende. Applied Geochemistry, v. 26, p. 1594-1596. doi:10.1016/j.apgeochem.2011.05.008

Nowicki, M.A., and Velbel, M.A., 2011. Preliminary quantification of a shape model for etch-pits formed during natural weathering of olivine. Special issue, Ninth International Symposium on the Geochemistry of the Earth's Surface, Applied Geochemistry, v. 26, p. S112-S114. doi:10.1016/j.apgeochem.2011.03.043

Velbel, M.A., and Ranck, J.M., 2008. Etch pits on naturally altered olivine from dunites of the Appalachian Blue Ridge Mountains, North Carolina, USA. Eighth Symposium on the Geochemistry of the Earth's Surface, London; Mineralogical Magazine, v. 72, p. 149-152 (published & archived online at <http://www.ingentaconnect.com/content/minsoc/mag/2008/00000072/00000001/art00032>).

Velbel, M.A., and Losiak, A.I., 2008. Influence of surface-area estimation on rates of plagioclase weathering determined from naturally weathered 3400-year old Hawaiian basalt. Eighth Symposium on the Geochemistry of the Earth's Surface, London; Mineralogical Magazine, v. 72, p. 91-94 (published & archived online at <http://www.ingentaconnect.com/content/minsoc/mag/2008/00000072/00000001/art00021>).

Velbel, M.A., 1999. Rate and duration of aqueous alteration on the carbonaceous chondrite parent body: Petrographic studies of kinetically controlled olivine replacement textures. NASA Contractor Report, pp. 19-1 to 19-15.

Publications of Michael A. Velbel, as of 01/04/2013, p. 7

McGuire, J.T., Smith, E.W., Long, D.T., Hyndman, D.W., Haack, S.K., Kolak, J.J., Klug, M.J., Velbel, M.A., and Forney, L.J., 1999. Temporal variations in biogeochemical processes that influence ground-water redox zonation. In Morganwalp, D.W., and Buxton, H.T. (eds.), U.S. Geological Survey Toxic Substances Hydrology Program - Proceedings of the Technical Meeting, Charleston, South Carolina, March 8-12, 1999 - Volume 3 of 3 - Subsurface Contamination from Point Sources: U.S. Geological Survey Water-Resources Investigations Report 99-4018C, p. 641-652.

Long, D.T., Hyndman, D.W., Haack, S.K., Klug, M.J., and Velbel, M.A., 1998. Preliminary observations of the hydrogeological, geochemical and microbiological processes that influence groundwater redox zonation. *Mineralogical Magazine*, v. 62a, p. 899-900.

Velbel, M.A., 1996. Some effects of clay minerals on the kinetics of silicate-mineral weathering. Short papers from the Fourth International Symposium on the Geochemistry of the Earth's Surface (S.H. Bottrell, ed.), Department of Earth Sciences, University of Leeds, pp. 520-524.

Velbel, M.A., 1996. Laboratory (& Homework) Exercises in the Geochemical Kinetics of Mineral-Water Reaction: Rate Law, Arrhenius Activation Energy, and the Rate-Determining Step. In *Teaching Mineralogy Workshop* (National Science Foundation, Smith College, June 1996; Brady, J., Cheney, J.T., Perkins, D., III, and Whelan, P.M., eds.), p. 207-227.

Velbel, M.A., 1996. Weathering and erosion. In *Macmillan Encyclopedia of Earth Sciences* (Dasch, E.J., ed.), Macmillan, v. 2, p. 1172-1177.

Velbel, M.A., 1995. Interaction of ecosystem processes and weathering. In *Solute Modelling in Catchment Systems* (Trudgill, S., editor), John Wiley & Sons, pp. 193-209.

Velbel, M.A., 1993. Weathering and pedogenesis at the watershed scale: Some recent lessons from studies of acid-deposition effects. Extended Abst., 3rd International Symposium on the Geochemistry of the Earth's Surface and of Mineral Formation, University Park, Penn., Aug. 1-6, 1993, *Chemical Geology*, v. 107, p. 337-339. [http://dx.doi.org/doi:10.1016/0009-2541\(93\)90204-V](http://dx.doi.org/doi:10.1016/0009-2541(93)90204-V)

Velbel, M.A., 1990. Mechanisms of saprolitization, isovolumetric weathering, and pseudomorphous replacement during rock weathering - a review. Extended Abst., 2nd International Symposium on the Geochemistry of the Earth's Surface and of Mineral Formation, Aix-en-Provence, France, July 2-8, 1990, *Chemical Geology*, v. 84, p. 17-18. [http://dx.doi.org/doi:10.1016/0009-2541\(90\)90149-2](http://dx.doi.org/doi:10.1016/0009-2541(90)90149-2)

Velbel, M.A., 1990. Material analyses of returned martian samples: Scientific goals and sample requirements. In: Gooding, J.L. (editor), *Scientific Guidelines for Preservation of Samples Collected from Mars*; NASA Technical Memorandum 4184, p. B-98 to B-100.

Velbel, M.A. and Gooding, J.L., 1990. Terrestrial weathering of Antarctic stony meteorites - Developments 1985-1989. In: Koeberl, C., and Cassidy, W.A. (editors), *Workshop on Differences Between Antarctic and Non-Antarctic Meteorites*, Vienna, Austria, July, 1989; Lunar and Planetary Institute Technical Report 90-01, p. 94-98.

Velbel, M.A., 1988. Weathering and Soil Forming Processes. In: Swank, W.T., and Crossley, D.A., Jr. (editors) *Forest Hydrology and Ecology at Coweeta*, Springer Ecological Studies Series, No. 66, p. 93-102.

Velbel, M.A., 1987. The distribution of evaporitic weathering products on Antarctic meteorites. NASA/JSC Report, p. 32-1 to 32-20.

Publications of Michael A. Velbel, as of 01/04/2013, p. 8

Velbel, M.A., 1987. Rate-controlling factors in the weathering of some ferromagnesian silicate minerals. Transactions, 13th Congress of the International Society of Soil Science, Hamburg, FRG, v. VI, p. 1107-1118.

Velbel, M.A., 1984. Weathering Processes of Rock-Forming Minerals. In: Fleet, M.E. (editor), Environmental Geochemistry, Mineralogical Association of Canada Short Course Handbook, v. 10, p. 67-111.

PAPERS IN PRESS

Velbel, M.A., in press. Terrestrial weathering of ordinary chondrites in nature and continuing during laboratory storage and processing: Review and implications for Hayabusa sample integrity. Meteoritics and Planetary Science, v. 47, p. n-n+17.

SHORT COURSE NOTES

Velbel, M.A., 1998. Geochemical Kinetics of Mineral-Water Interactions: Chemical Reaction Rates and Rate Processes in Mineral and Rock Weathering. Short Course Notes, Cooperative Research Centre for Landscape Evolution and Mineral Exploration, Canberra, ACT, Australia, 6-9 April 1998, 66 pp.

GUIDEBOOKS

Velbel, M.A., and Price, J.R., 2001. Field Trip Guide to Geology, Geomorphology, and Regolith of the Southern Appalachian Blue Ridge Between Asheville and Otto, North Carolina. In Knoepp, J., Markewitz, D., Morris L., Ogden, E. Richter D., Van Lear, D., and West, L. (eds), Soils of the Blue Ridge and Piedmot: A Legacy of Use. Soil Science Society of America Division S-7 Forest and Range Soils, Annual Conference Field Trip Guidebook, 25-27 Oct 2001.

Velbel, M.A., Price, J.R., and Brandt, D.S., 1994. Sedimentology, paleogeography, and geochemical weathering of the Pennsylvanian strata of Grand Ledge, Michigan. Eastern Section - American Association of Petroleum Geologists Annual Meeting Field Trip Guidebook; Great Lakes Section - SEPM 24th Annual Fall Field Conference Guidebook; and Michigan Basin Geological Society Field Trip Guidebook, 58 pp.

Velbel, M.A., and Brandt, D.S., 1989. Field Guide to the Sedimentology and Paleogeography of the Pennsylvanian Strata of Grand Ledge, Michigan. Michigan Basin Geological Society Field Trip Guidebook, 33 pp.

Velbel, M.A., 1988. Sedimentology of the Pennsylvanian Deposits of Grand Ledge, Michigan. In: Velbel, M.A., Crum, J.R. and Larson, G.J., (editors), Soils, Sediments, and Sedimentary Rocks of Southern Michigan. Field Trip Guidebook, 1988 Annual Meeting, Clay Minerals Society, p. 1-1 to 1-30.

GUIDEBOOK CONTRIBUTIONS

Sallman, J.B., and Velbel, M.A., 2009. Honeycomb weathering of the Pounds Sandstone at Ferne Clyffe State Park, Illinois. In Weibel, P., Follmer, L., and Johnson, D. (eds.), Ancient Landscapes of the Shawnee Hills, Illinois. Great Lakes Section – Society of Economic Paleontologists and Mineralogists Annual Field Conference Guidebook.

DISCUSSIONS, COMMENTS, AND REPLIES

Velbel, M.A., 1989. Discussion of "Rates of soil formation: Implications for soil-loss tolerance", by E.B. Alexander. *Soil Science*, v. 148, p. 71-74.

Graustein, W.C. and Velbel, M.A., 1981. Comment on: Weathering before the advent of land plants: Evidence from detrital K-feldspars in Cambro-Ordovician arenites. *Geology*, v. 9, p. 505.

Velbel, M.A., 1980. Petrography of subduction zone sandstones - A discussion. *Journal of Sedimentary Petrology*, v. 50, p. 303-304.

REVIEWS & MISCELLANY

Velbel, M.A., 2012. Clay and phyllosilicate minerals in extraterrestrial materials. (Publication announcement) *Elements*, v. 8, no. 3, p. 227.

Velbel, M., 2012. Phoenix first to see silt grains on Mars (Correspondence). *Nature*, v. 481, p. 29.

Ashley, J.W., Fries, M.D., Huss, G.R., Chappelow, J.E., Golombek, M., Velbel, M.A., Ruff, S.W., Schröder, C., Farrand, W.H., Durda, D.D., Bland, P.A., Fleischer, I., McAdam, A., Knudsen, A.T., Leshin, L.A., Steele, A., and Wright, S.P., 2009. The Scientific Rationale for Studying Meteorites found on Other Worlds. White paper submitted to: 2013-2022 Planetary Science Decadal Survey Committee, 7 pp.

Velbel, M.A., 2009. (Book review) **Geochemical Kinetics**, by Y. Zhang. *Physics Today*, v. 62 no. 9, p. 53-54.

Velbel, M.A., 2004. Where has all the water gone? Looking for evidence of ancient asteroidal aqueous alteration in meteorites. *Michigan in Space (A Publication of the Michigan Space Grant Consortium)*, v. 7, p. 15-16.

Velbel, M.A., 2002. (Book review) **Beneath Our Feet: The Rocks Of Planet Earth**, by Ron Vernon. *Science Books and Films*, v. 38, p. 509-510.

Velbel, M.A., 1999. (Book Review) **Venus Revealed: A New Look Below the Clouds of our Mysterious Twin Planet**, by D.H. Grinspoon. *Science Books & Films*, v. 35, p.272 (excerpt; full text at <http://www.SBFonline.com>).

Velbel, M.A., 1997. (Book review) **Chemical Equilibria and Kinetics in Soils**, by Garrison Sposito. *Journal of Geology*, v. 105, p. 131.

Velbel, M.A., 1997. (Book review) **Soil Solution Chemistry: Applications to Environmental Science and Agriculture**, by Jeffrey D. Wolt. *Journal of Geology*, v. 105, p. 131-132.

Velbel, M.A., 1996. (Book review) **Material Fluxes on the Surface of the Earth**, National Research Council. *Earth-Science Reviews*, v. 41, p. 211-212.

Velbel, M.A., 1996. (Book review) **Rock Weathering and Landform Evolution**, edited by D.A. Robinson and R.B.G. Williams. *Journal of Geoscience Education*, v. 44, p. 225-226.

Velbel, M.A., 1996. (Book review) **Rock Weathering and Landform Evolution**, edited by D.A. Robinson and R.B.G. Williams. *Geochimica et Cosmochimica Acta*, v. 60, no. 7, p. 1272-1273.

Publications of Michael A. Velbel, as of 01/04/2013, p. 10

- Velbel, M.A., 1995. Cover photo & caption, *Chemical Weathering Rates of Silicate Minerals*, edited by Susan L. Brantley and Art F. White: Mineralogical Society of America, *Reviews in Mineralogy*, v. 31.
- Velbel, M.A., 1995. (Book review) **Mountains** (from *The Illustrated Library of the Earth*), edited by Jack D. Ives. *Science Books & Films*, v. 31, p. 14.
- Velbel, M.A., 1994. (Letter to the Editor) Beadle collection. *The Mineralogical Record*, v. 25, p. 77.
- Velbel, M.A., 1993. (Book Review) **Sedimentary Petrology** (2nd ed.), by H. Blatt. *Economic Geology*, v. 88, p. 1295-1296.
- Velbel, M.A., 1993. Message from the President. *Newsletter, Great Lakes Section - SEPM (Society for Sedimentary Geology)*, summer 1993 (v. 22, no. 1, p. 1-3).
- Velbel, M.A., 1993. Great Lakes Section News. *SEPM News*, v. 15, no. 2, p. 4&6.
- Brantley, S.L., and Velbel, M.A., 1993. Preface. In Brantley, S.L., and Velbel, M.A. (editors), *Geochemical Kinetics of Mineral-Water Reactions in the Field and the Laboratory: Chemical Geology*, v. 105, no. 1/3, p. VII-IX. (3 citations)
- Velbel, M.A., 1993. (Book review) **Soil: Morphology, Genesis, and Classification**, by Delvin S. Fanning and Mary C.B. Fanning. *Journal of Geology*, v. 101, p. 127.
- Velbel, M.A., 1992. (Book Review) **Colour Atlas of the Surface Forms of the Earth**, by Helmut Blume. *Science Books & Films*, v. 28, p. 199.
- Velbel, M.A., 1992. (Book review) **The Nature of Weathering: An Introduction**, by E. Yatsu. *American Journal of Science*, v. 292, p. 226-227.
- Velbel, M.A., 1989. (Book review) **McGraw-Hill Encyclopedia of the Geological Sciences (2nd ed.)**, S.P. Parker, (ed.). *Science Books & Films*, v. 24, p. 141.
- Velbel, M.A., 1986. (Book Review) **Climatic Geomorphology**, by J. Budel. *American Journal of Science*, v. 286, p. 591-592.
- Velbel, M.A., 1985. (Book Review) **Pedology**, by P. Duchaufour, transl. T.R. Paton. *American Journal of Science*, v. 285, p. 381-382.
- Velbel, M.A., 1985. (Book Review) **Sedimentary Petrology**, by H. Blatt. *American Journal of Science*, v. 285, p. 285-286.
- Velbel, M.A., 1983. (Book Review) **Sedimentology: Process and Product**, by M.R. Leeder. *American Journal of Science*, v. 283, p. 988-989.
- Berner, R.A., A.S. Pooley, M.D. Krom, E.L. Sjöberg, and M.A. Velbel, 1980, Scanning electron photomicrograph of Maxwell's demon. *Journal of Irreproducible Results*, v. 26, p. 2.