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Richard C Schugart* (rschugart@mbi.osu.edu), The Ohio State University, 210 Mathematics Building, 231 West 18th Ave, Columbus, OH 43210, and **Mansoor A Haider** (m_haider@ncsu.edu), Department of Mathematics, Box 8205, North Carolina State University, Raleigh, NC 27695-8205. *Analysis of a Mechano-Chemical Model for Passive Swelling of an Isolated Chondron Under Osmotic Loading.*

Analytical solutions for a mechano-chemical model of deformation due to osmotic loading of an isolated chondron, which consists of an articular cartilage cell and its encapsulating pericellular matrix, will be presented. The solutions are based on asymptotic expansions of a stress-balance condition involving a fourth-degree polynomial. A small strain analysis will also be presented under the assumption that the fibers of the encapsulating matrix are stiff, thereby restricting chondron swelling. (Received August 07, 2006)