1145-15-1771 **Misha E Kilmer*** (misha.kilmer@tufts.edu), Mathematics Department, 503 Boston Ave, Medford, MA 02155, and **Elizabeth Newman** (e.newman@tufts.edu), Department of Mathematics, 503 Boston Ave., Medford, MA 02155. *Tensor Dictionaries for Applications in Imaging.*

Most problems in imaging science involve operators or data that are inherently multidimensional, yet often traditional approaches to modeling, analysis and dimensionality reduction involve matricized data. In this talk, we discuss ways in which multiway array (aka tensor) dictionaries can be leveraged for tasks such as image compression and reconstruction, recognition, and classification. The unifying mathematical construct in our approaches is the t-product (Kilmer and Martin, LAA, 2011) and associated algebraic framework which permits extension of linear algebraic concepts and matrix algorithms to tensors. Dictionaries from training data can be generated via an Eckart-Young result or, in the cases requiring constraints such as sparsity or non-negativity, learned in an optimization framework. As we demonstrate on examples, these dictionaries are a powerful tool we can leverage in matrix-mimetic algorithms for the tasks noted above. (Received September 24, 2018)