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Search for new materials: phase spread alloy thin film fabrication and characterization MOSES MARSH, ALI BASARAN, JOSE DE LA VENTA, OMAR KHATIB, OLEG SHPYRKO, DMITRI BASOV, IVAN SCHULLER, University of California, San Diego — We use the phase spread alloy (PSA) method of fabricating compositionally heterogeneous thin films as an efficient way to produce and screen new, interesting materials (e.g. superconductors, magnetoresistive compounds, etc.). This method uses co-sputtering to deposit material with smoothly varying element concentration across a substrate. Both local and non-local probes are used to verify the composition of the sample. Using the La-Si-C system as an example, we perform x-ray fluorescence from a synchrotron source, x-ray diffraction from a lab source, atomic force microscopy, and infrared spectroscopy on one sample to verify the presence of different phases and their properties.

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