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Recent Advances in Magnetic Tunnel Junction Materials and Stack for Thermally-Assisted Magnetic Random Access Memory ANTHONY ANNUNZIATA, PHILIP TROUILLOUD, IBM Research, SEBASTIEN BANDIERA, Crocus Technology, STEPHEN BROWN, MICHAEL GAIDIS, IBM Research, ERWAN GAPIHAN, Crocus Technology, EUGENE O'SULLIVAN, NATHAN MARCHACK, DANIEL WORLEDGE, IBM Research — We report magnetic and electrical characterization measurements of sheet films and nanopillar magnetic tunnel junction devices useful for a new type of Magnetic Random Access Memory that is capable of operating at high ambient temperatures (greater than 125 C) and of surviving the high process temperatures used in silicon chip manufacturing. For unpatterned sheet film stacks, we report measurements of the magnetization versus applied field and temperature, antiferromagnet blocking temperature, and tunneling magnetoresistance. For patterned nanopillar devices in the size range of 80 - 200 nm, we report measurements of the tunneling magnetoresistance, depinning voltage and temperature, and sense and storage layer reversal fields.

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