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Formation and structure of amorphous carbon char from polymer materials JOHN LAWSON, DEEPAK SRIVASTAVA, NASA Ames Research Center — Amorphous carbonaceous char produced from burning polymer solids has insulating properties that makes it valuable for aerospace thermal protection systems as well as for fire retardants. A pyrolytic molecular dynamics simulation method is devised to study the transformation of the local microstructure from virgin polymer to a dense, disordered char. Release of polymer hydrogen is found to be critical to allow the system to collapse into a highly coordinated structure. Mechanisms of the char formation process and the morphology of the resulting structure are elucidated.

John Lawson
NASA Ames Research Center

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