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Physics of Failure

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One of the questions solid state physics was long supposed to answer was why a glass shatters when you drop it on the floor but a spoon does not. It turned out not to be such an easy problem and was only occasionally addressed until a series of major accidents in the 1940's and 1950's directed scientific attention to it. I will talk about the basic ideas of fracture mechanics that emerged as the answer, and display some recent applications to failure of silicon, rubber, and graphene.