to obtain the fragment distribution. For a two-dimensional material we compared the fraction of fragments whose size exceeds s with the Mott distribution function, namely an exponential decrease with $s^{\frac{1}{2}}$. We found that high crack densities led to a faster decrease than this. Most experimentally observed exploding cylinders exhibit such behavior.

In the asymptotic region of large sizes our results yielded an exponential drop in the number of fragments with size.

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FRACTOGRAPHY OF IRRADIATED NUCLEAR FUEL ELEMENTS

A. Munitz, Z. Livne and C. Carlos

Radiation effects in nuclear fuel elements were studied by fractography. Fuel elements were experimentally irradiated at various doses at the IRR-2. Irradiated as well as unirradiated elements were bent till fracture with a bending press. The fracture surfaces were examined by a standard replication technique. The structures reveal the same morphological zones as in standard tensile fractures.

The crack origin zone (fibrous) appears near the fuel indent. The radial marks zone starts near the origin and covers about 2/3 of the cross sectional area. The third zone (shear rupture) has a bump, sometimes 1 cm high.

The crack origin zone is mainly brittle. As the crack propagates in the radial marks zone it becomes more ductile and turns entirely ductile at the bump top. Beyond the bump it becomes brittle again. Fractures from irradiated and unirradiated fuel elements exhibit structural differences in all three zones.

FATIGUE CRACK PROPAGATION MECHANISMS IN POLYMERS

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Polymers, which are known to be poor conductors of heat, are much more sensitive to the frequency of cyclic loading than metals. Two types of polymers were investigated in order to study the effect