

UNIVERSIDAD DE CANTABRIA

**DEPARTAMENTO DE CIENCIA E INGENIERIA DEL
TERRENO Y DE LOS MATERIALES**

TESIS DOCTORAL

**FISURACION INDUCIDA POR HIDROGENO DE ACEROS
SOLDABLES MICROALEADOS: CARACTERIZACION Y
MODELO DE COMPORTAMIENTO**

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Santander, Mayo 1998

ANEJO

**CURVAS Y FRACTOGRAFIAS DE
LOS ENSAYOS REALIZADOS**

DESCRIPCION DEL CONTENIDO

En este Anejo se recogen los resultados de la caracterización frente a FIH, realizados sobre probetas de tipo compacto y en diversas condiciones de sollicitación, realizada sobre los aceros E500 y E690, tal y como se adelantó en el Capítulo 5. Los resultados se presentan, para cada muestra, en forma de cuatro gráficas: en la primera aparecen las curvas carga-COD y velocidad de propagación-COD; en la segunda se presenta la velocidad de propagación frente al parámetro de caracterización en fractura utilizado, K_I o K_{II} ; la tercera gráfica contiene los valores de velocidad de propagación representados frente a la longitud de fisura; finalmente, se realiza un estudio fractográfico en diversas zonas de su superficie de propagación obteniéndose las láminas presentadas. La localización de las fractografías presentadas en las láminas en la superficie de propagación se realiza a través del esquema de la gráfica 4 .

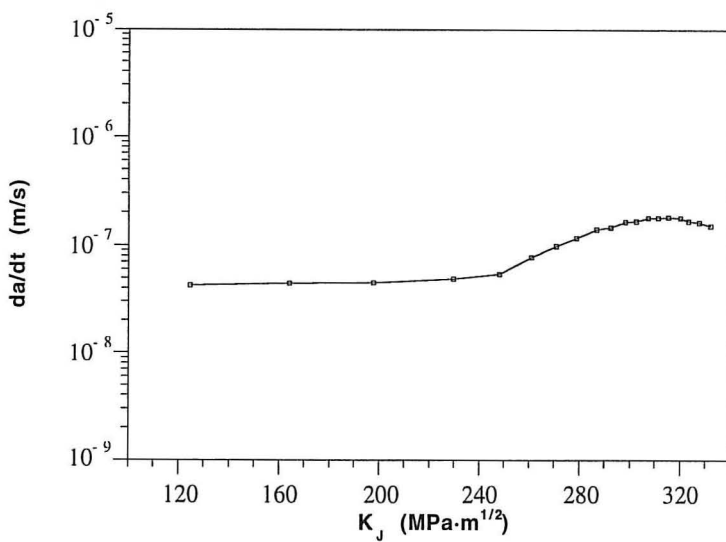
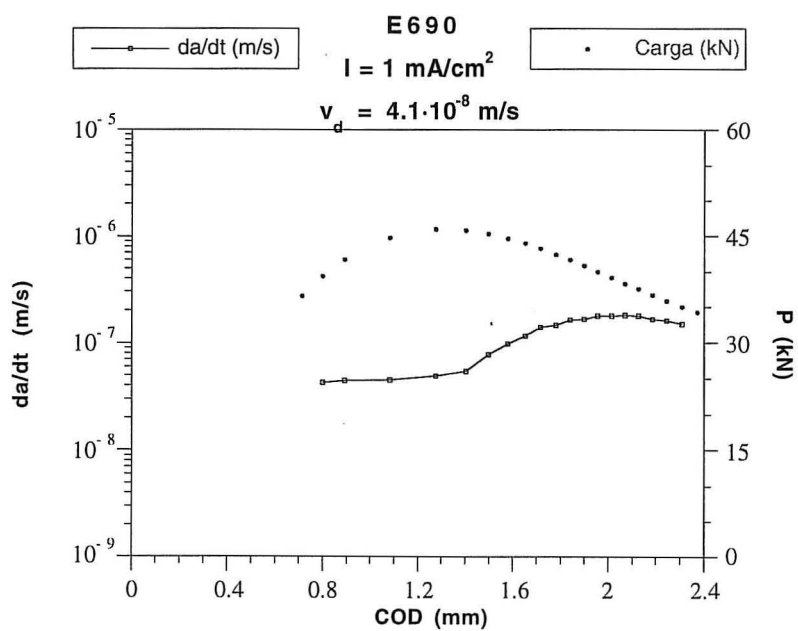
La representación en forma de 4 gráficos y una lámina, permite obtener, de forma rápida y simultánea, gran cantidad de información sobre el ensayo. Así, un determinado elemento microestructural detectado en la fractografía de la lámina es perfectamente localizado en cuanto a longitud de fisura, gráfica 4, y velocidad de propagación con que fue desarrollada, gráfica 3. A partir de las anteriores es posible deducir el factor de intensidad de tensiones, gráfica 2, y la carga y COD aplicados, gráfica 1.

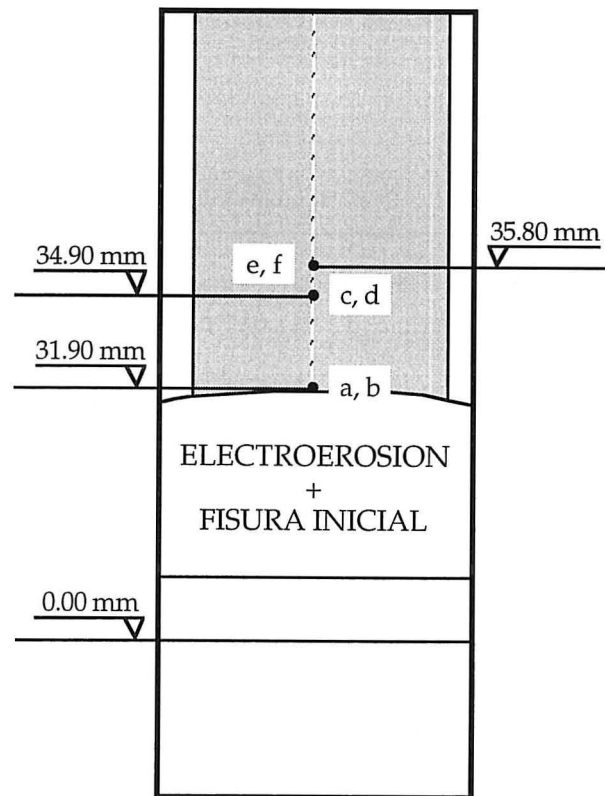
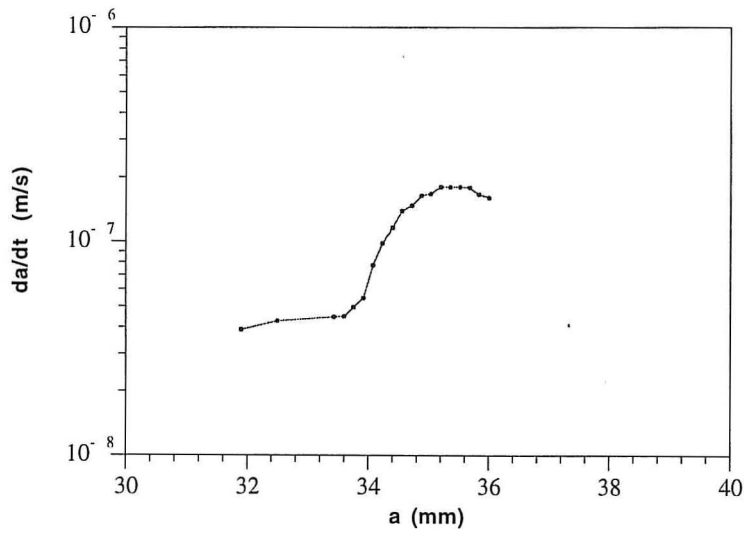
A continuación, en la Tabla A.1, se presentan el conjunto de ensayos realizados sobre los dos aceros con sus condiciones de densidad de corriente y velocidad de sollicitación.

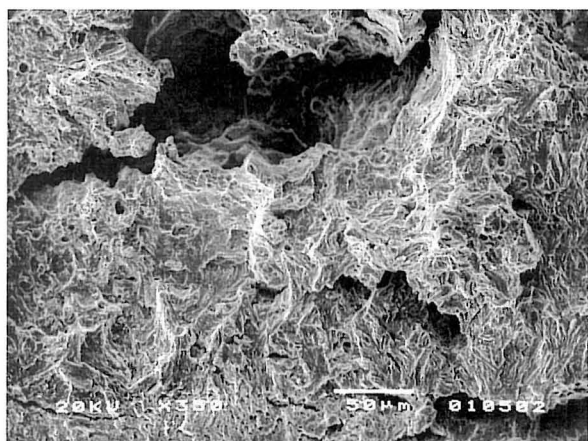
Tabla A.1. Relación de las condiciones de los ensayos realizados

E500			E690		
Muestra	Densidad de corriente (mA/cm ²)	Velocidad de desplaz. (m/s)	Muestra	Densidad de corriente (mA/cm ²)	Velocidad de desplaz. (m/s)
	-	-	CL1.J5	1	4.1·10 ⁻⁸
	-	-	CL1.J3	1	8.2·10 ⁻¹⁰
CL2.J5	5	4.1·10 ⁻⁷	CL1.J4	5	4.1·10 ⁻⁷
CL2.J12	5	8.2·10 ⁻⁸ (*)		-	-
CL2.J1	5	4.1·10 ⁻⁸	CL1.J8	5	4.1·10 ⁻⁸
CL2.J11	5	4.1·10 ⁻⁹	CL1.J1	5	4.1·10 ⁻⁹
CL2.J12	5	8.2·10 ⁻¹⁰ (*)		-	-
CL2.J2	5	8.2·10 ⁻¹⁰	CL1.J9	5	8.2·10 ⁻¹⁰
CL2.J9	10	8.2·10 ⁻⁸ (**)	CL1.J2	10	4.1·10 ⁻⁷
CL2.J4	10	4.1·10 ⁻⁹	CL1.J11	10	4.1·10 ⁻⁸
CL2.J9	10	8.2·10 ⁻¹⁰ (**)	CL1.J10	10	4.1·10 ⁻⁹

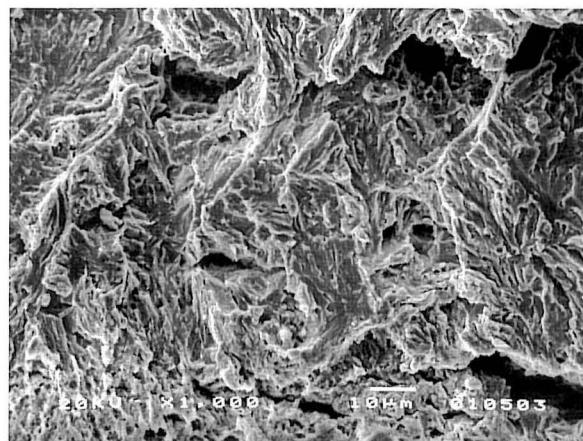
(*), (**): Una misma probeta



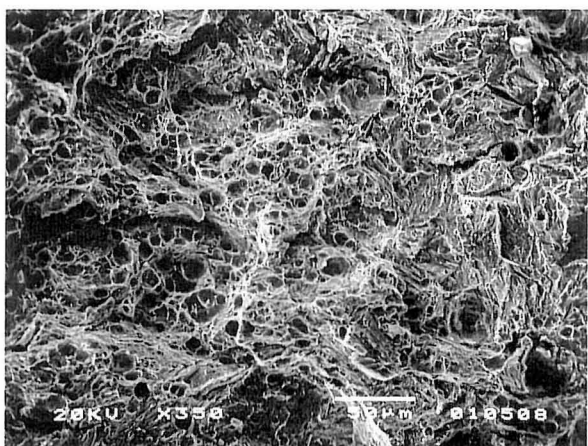




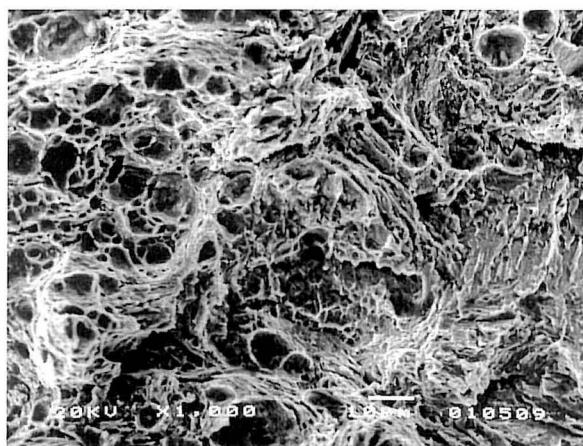
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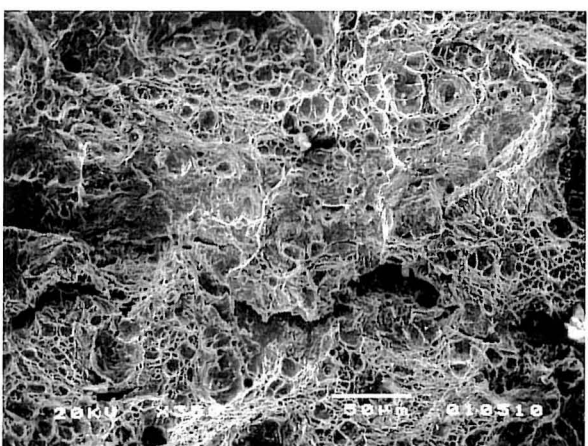
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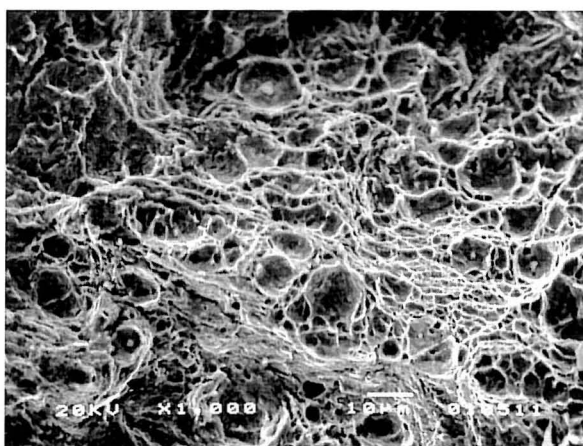
(c)



(d)

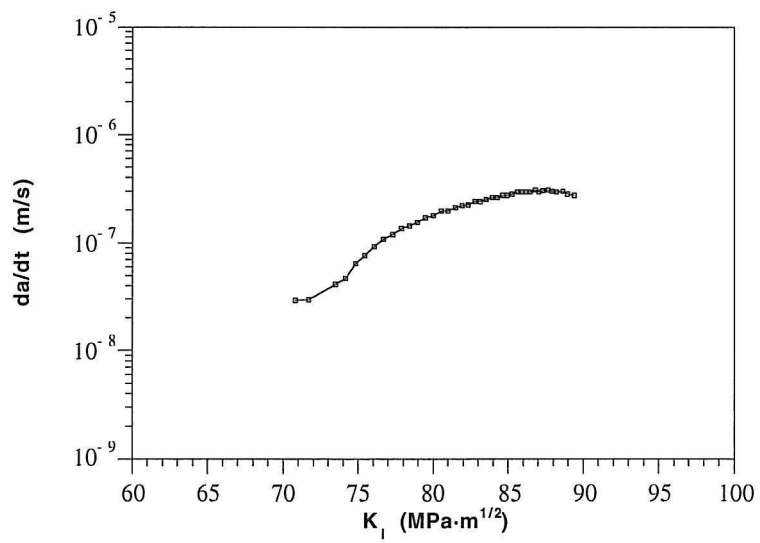
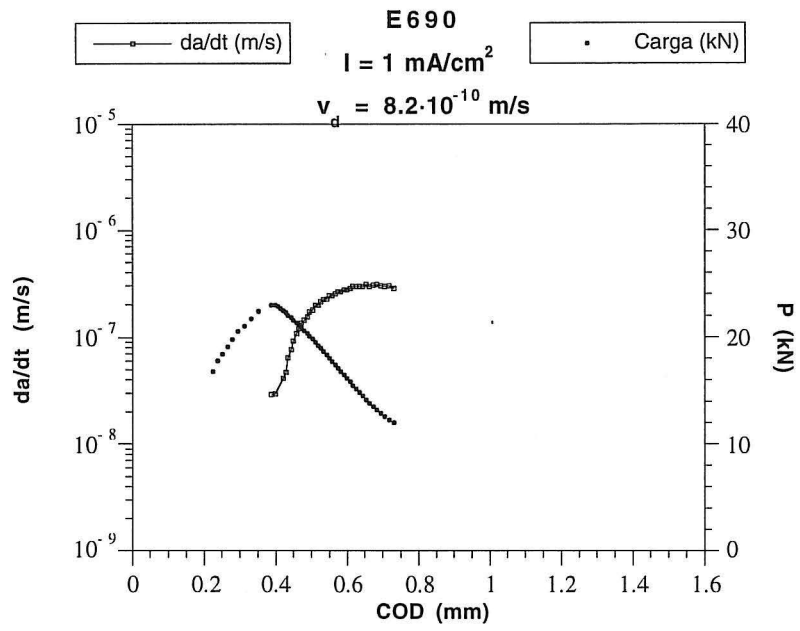


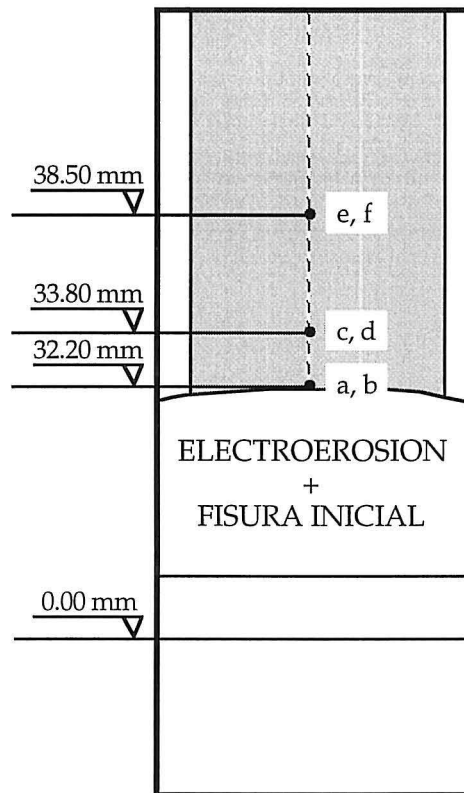
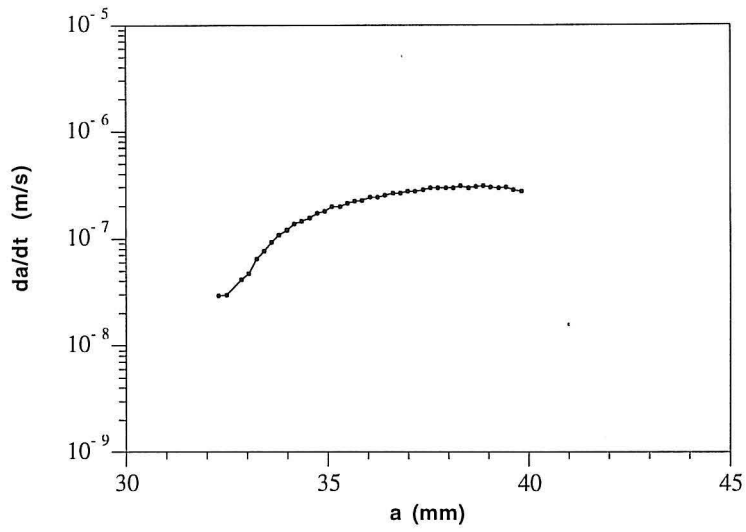
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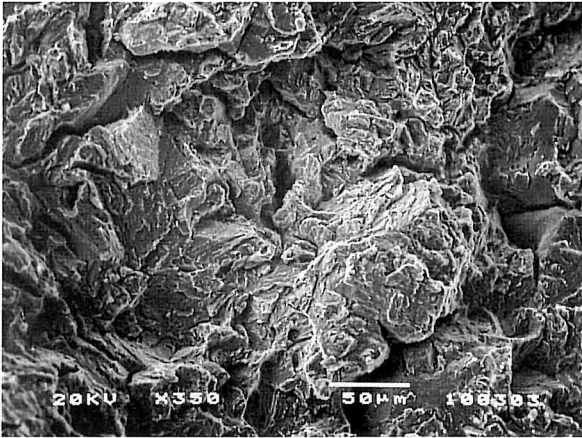


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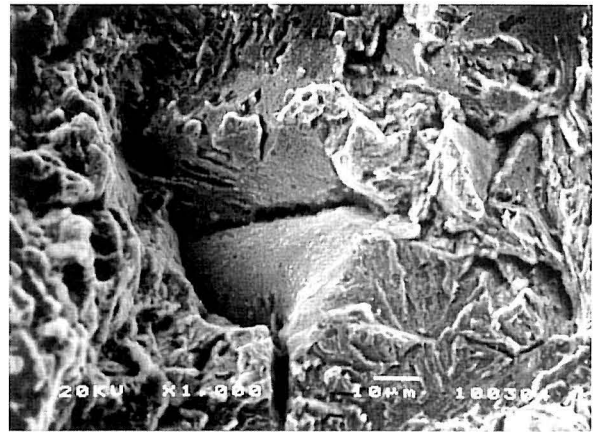
CL1.J5



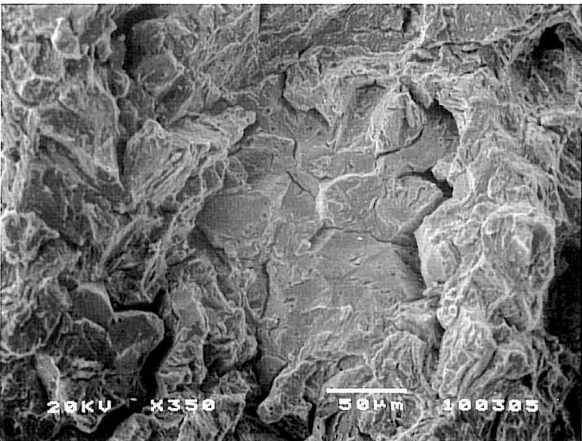




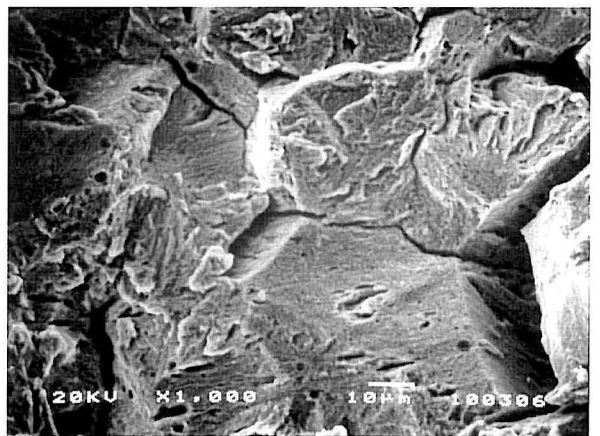
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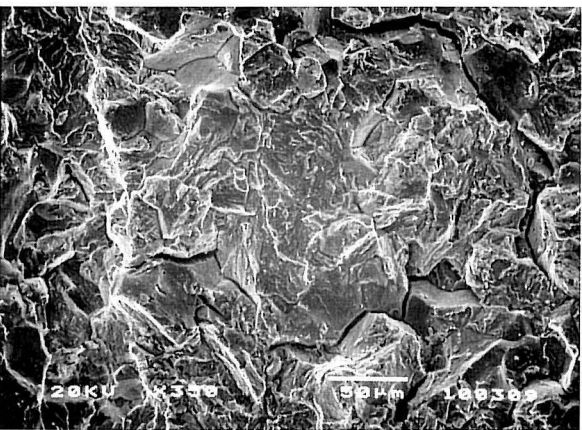
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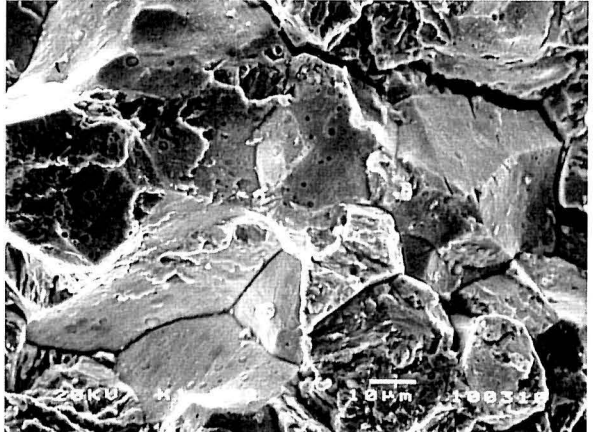
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(d)



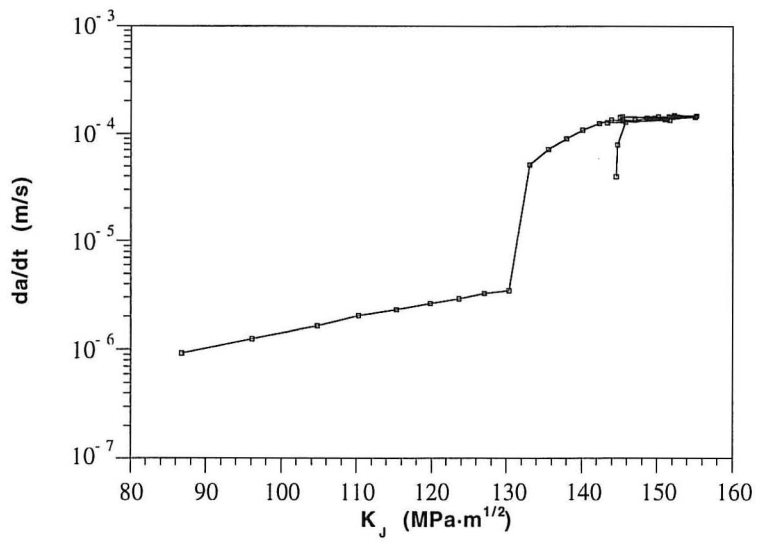
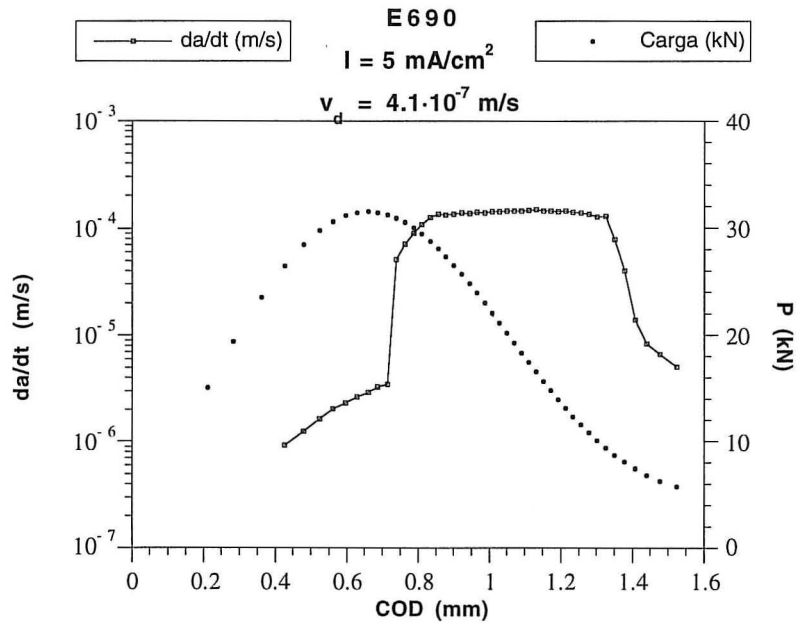
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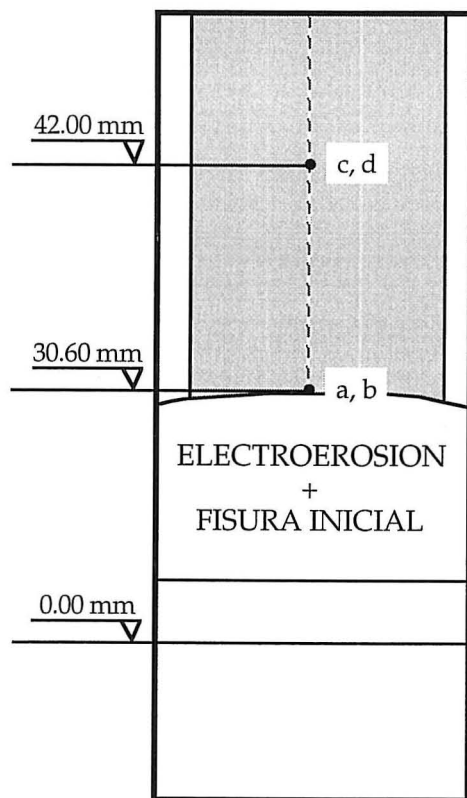
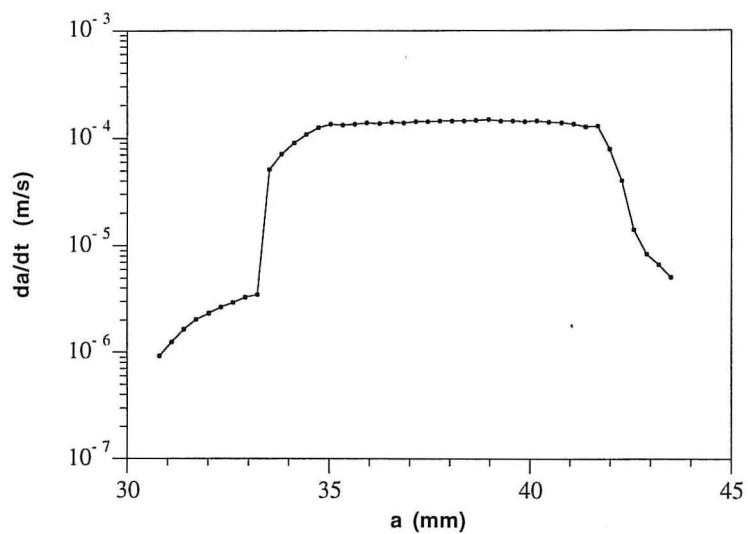


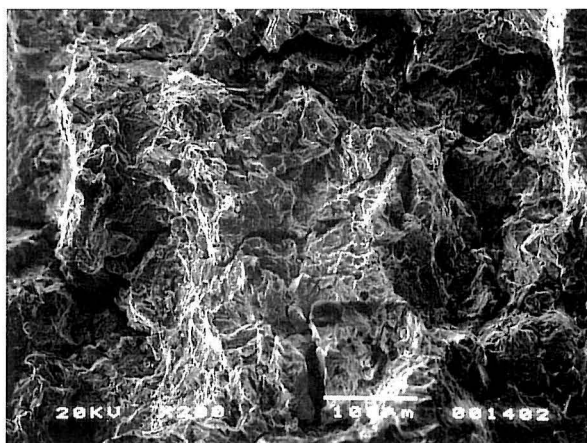
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CL1.J3

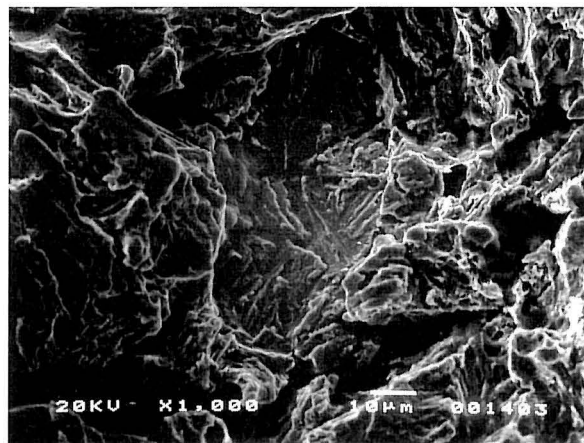
Lámina A-2



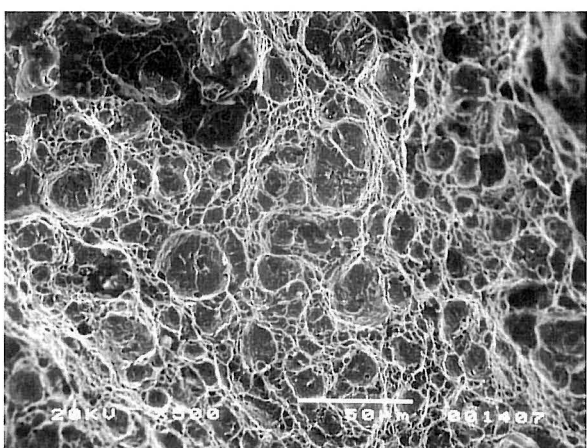




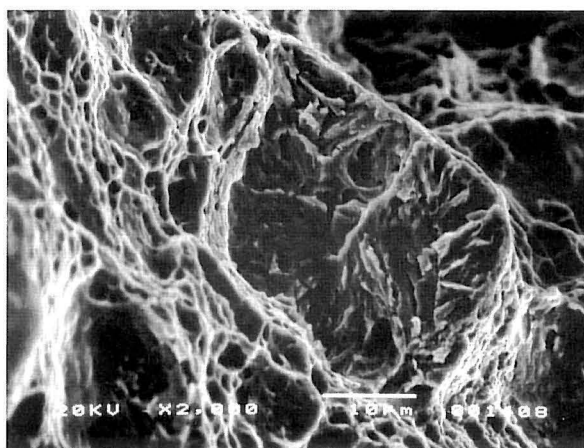
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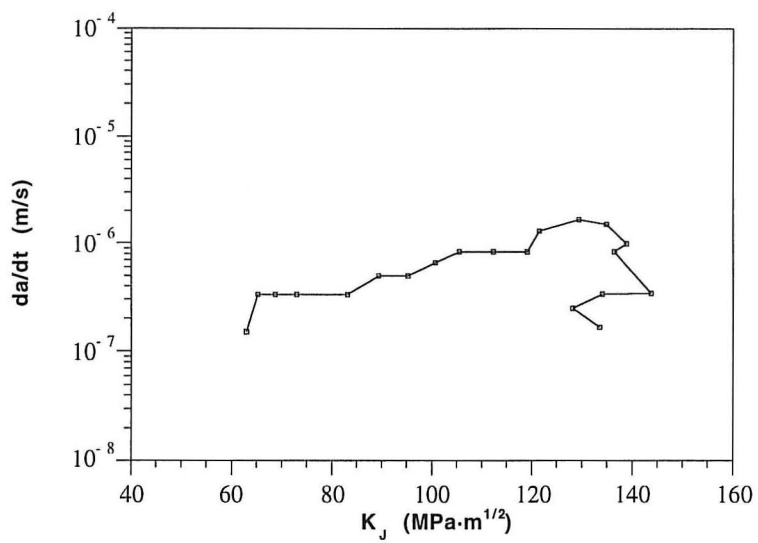
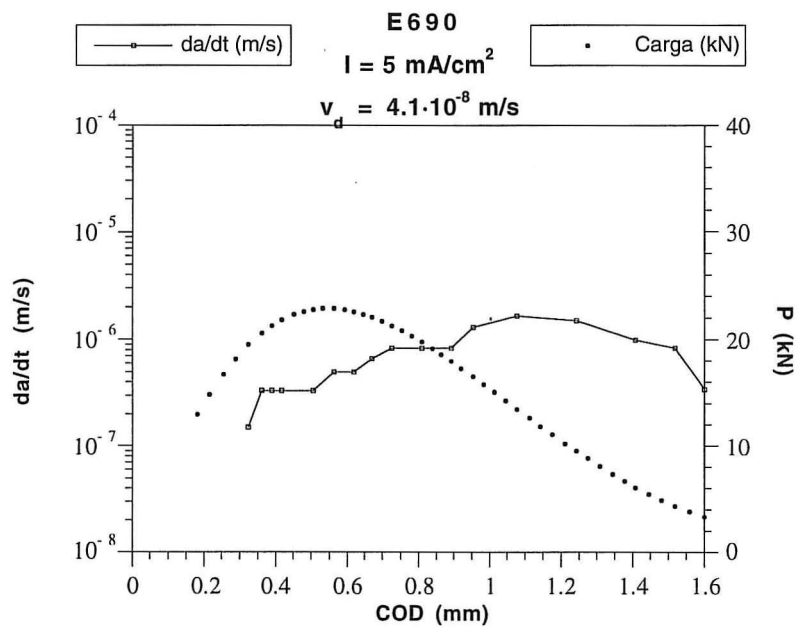
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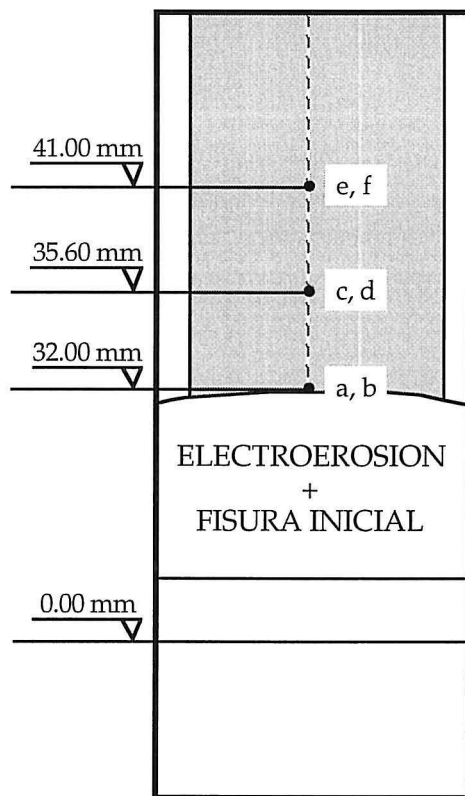
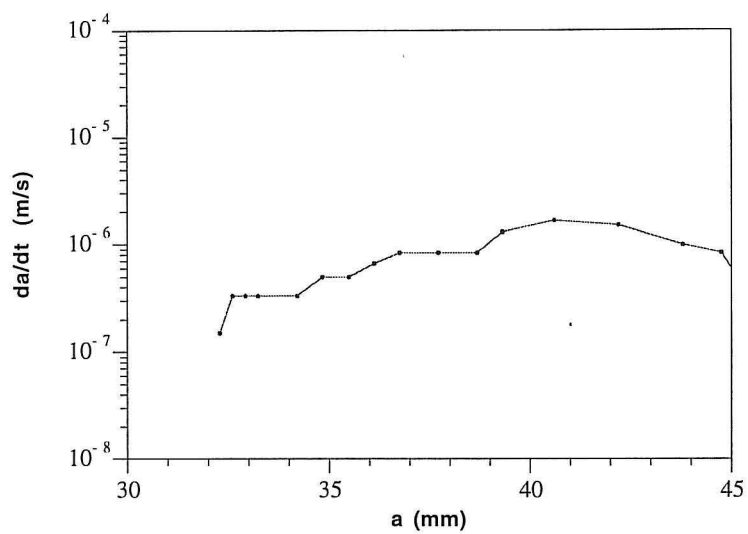


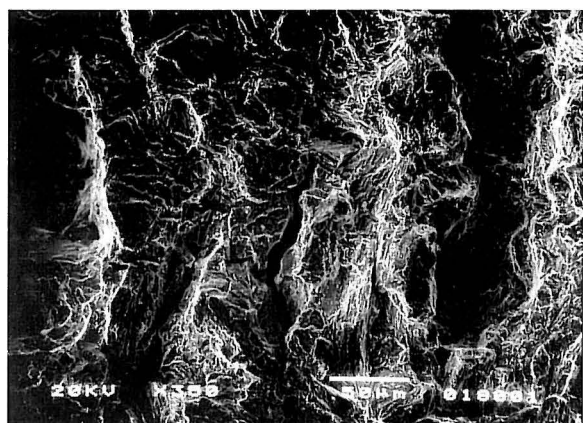
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CL1.J4

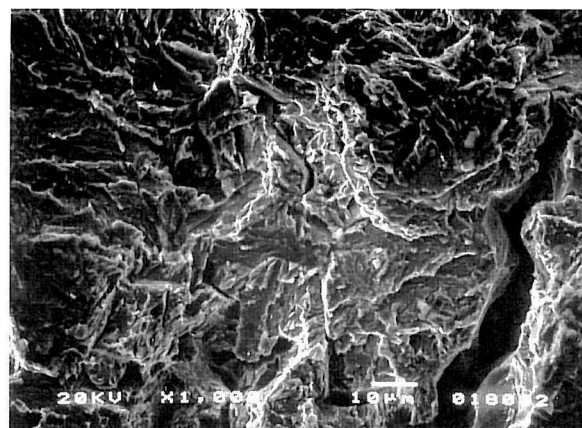
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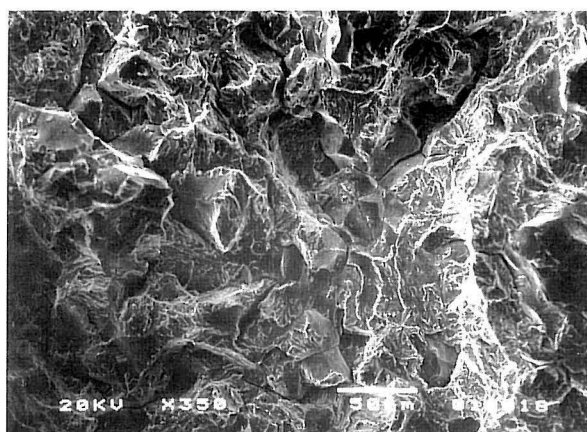




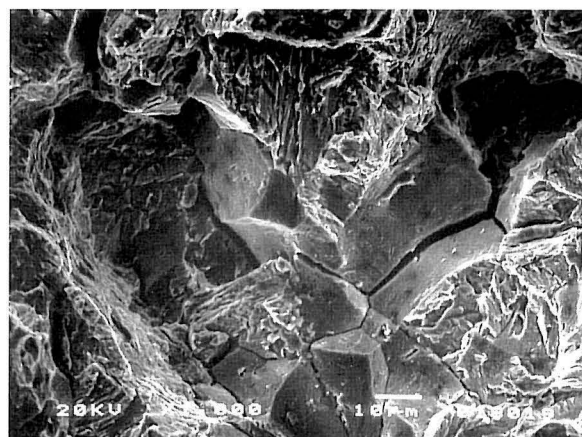
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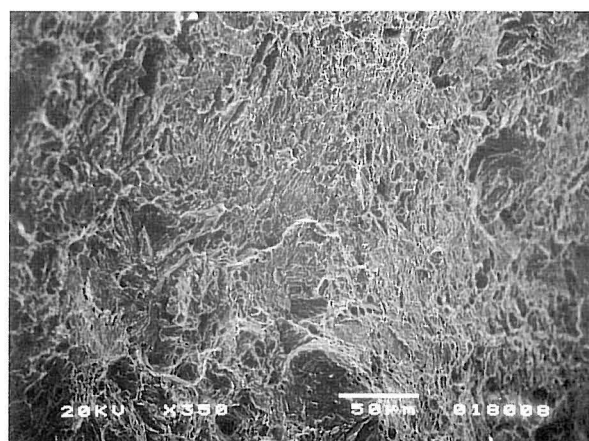
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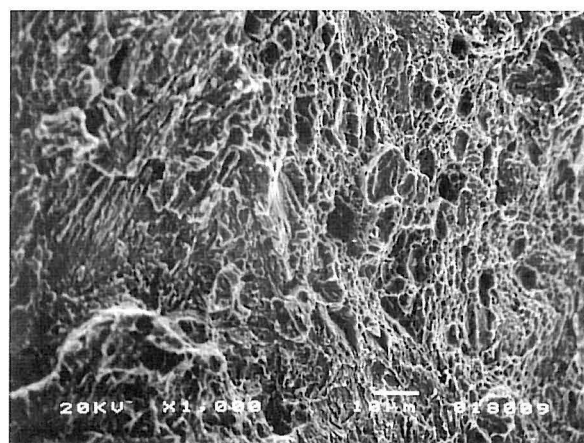
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(d)



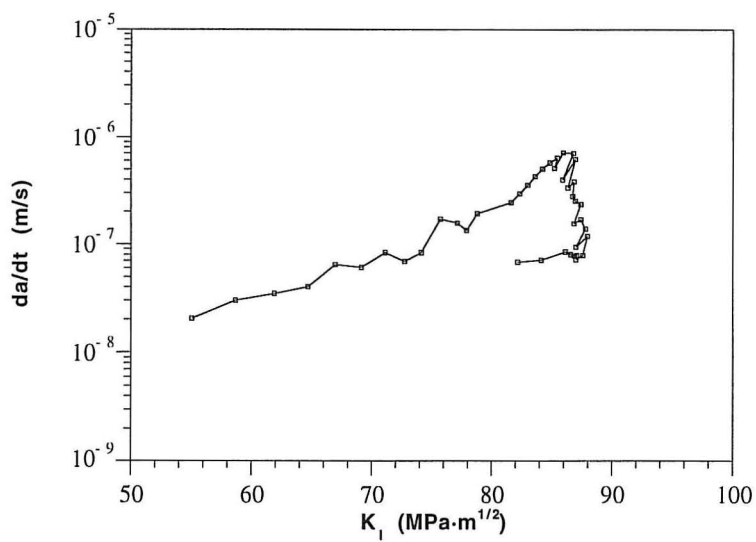
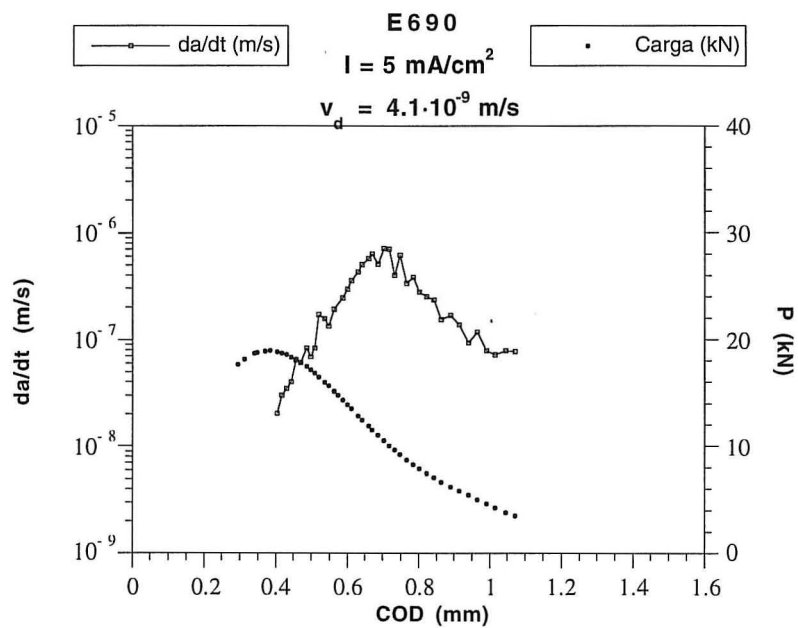
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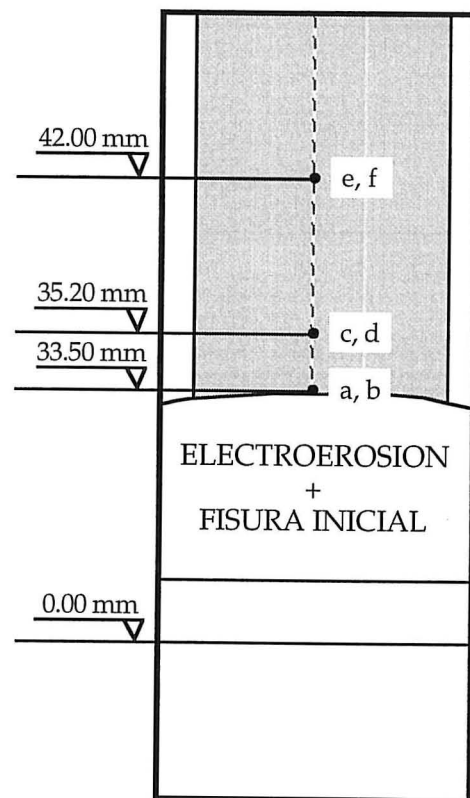
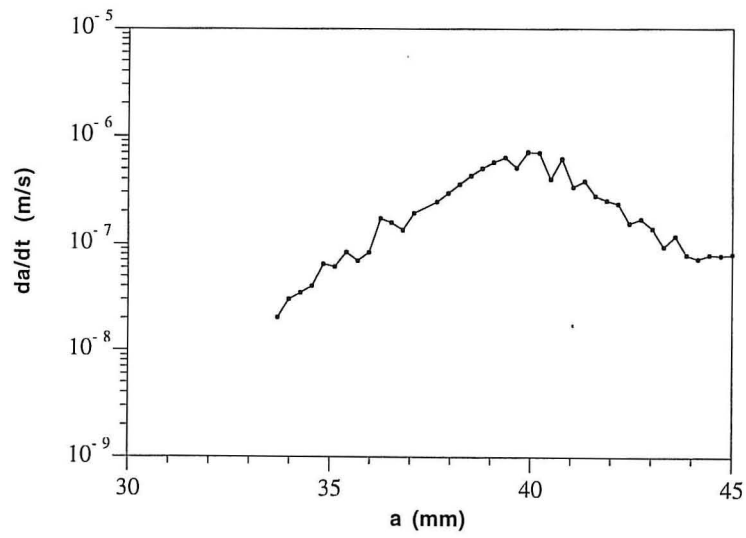


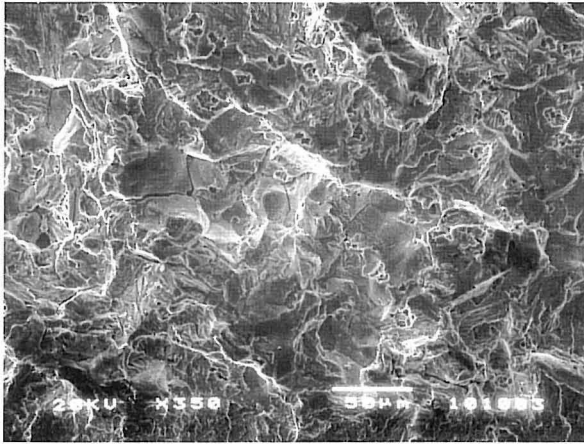
(f)

CL1.J8

Lámina A-4



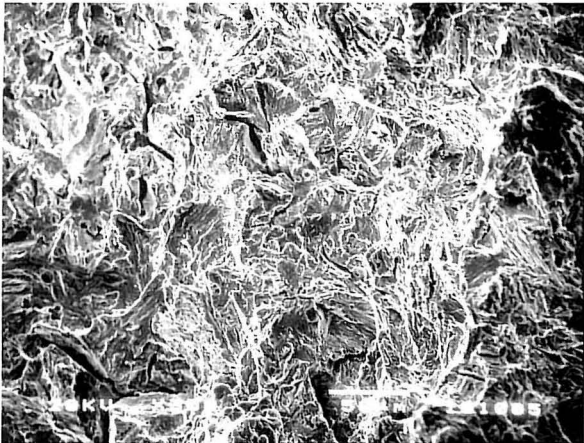




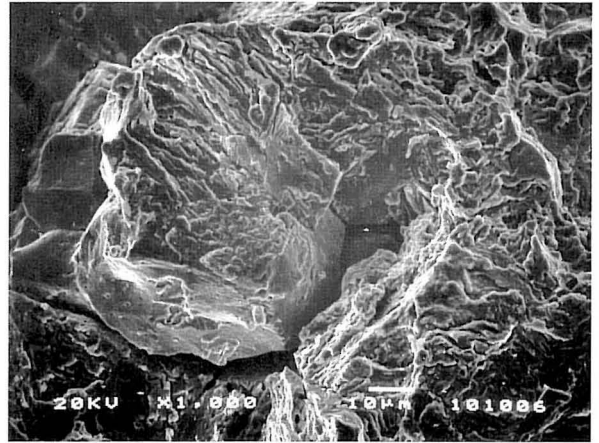
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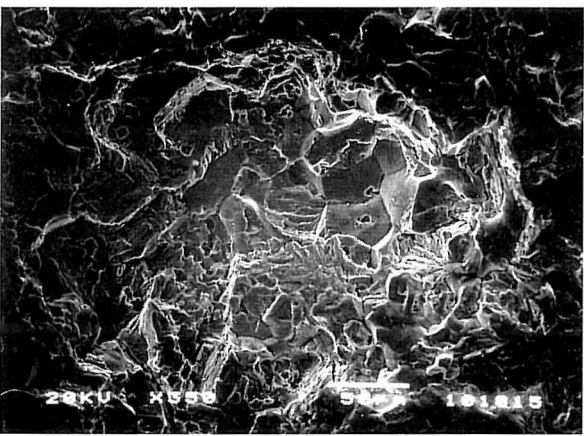
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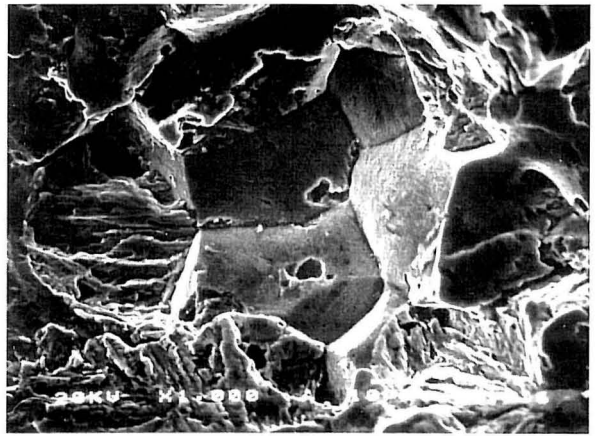
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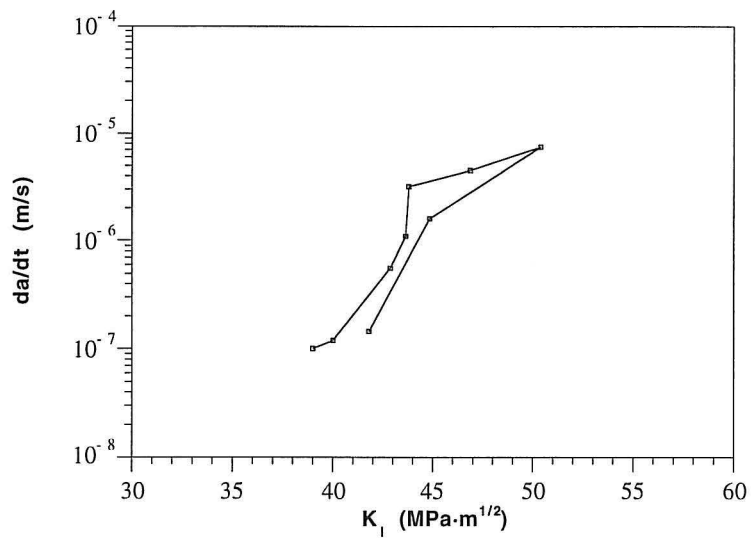
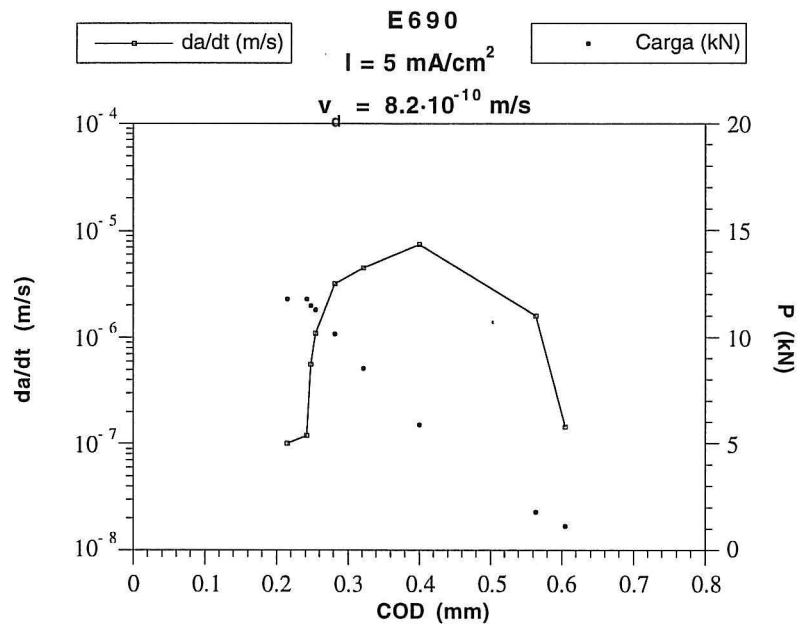
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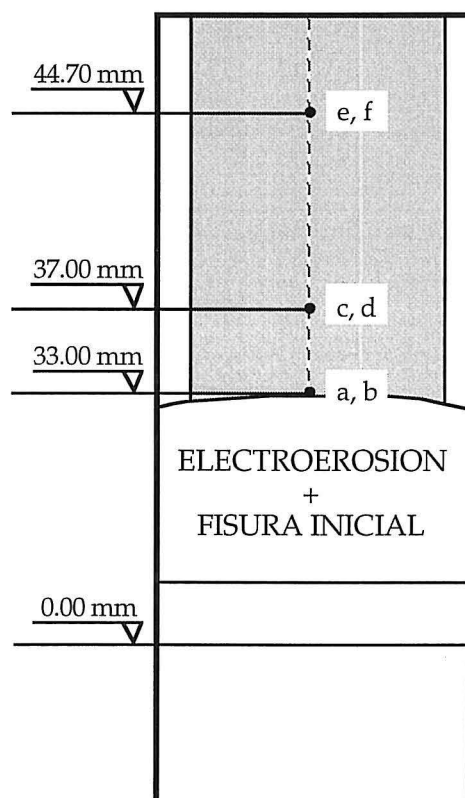
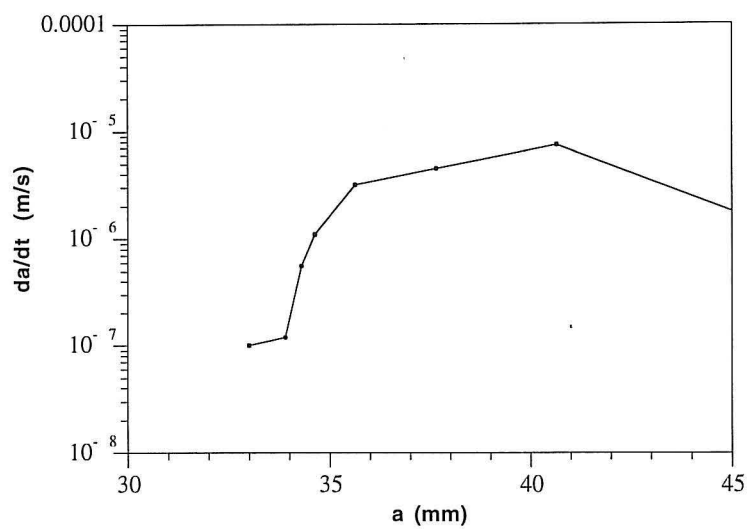


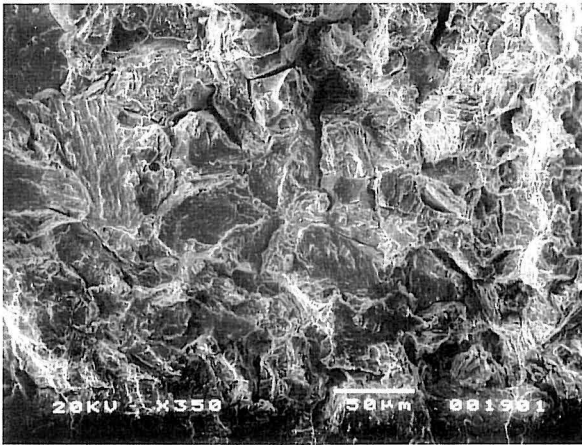
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CL1.J1

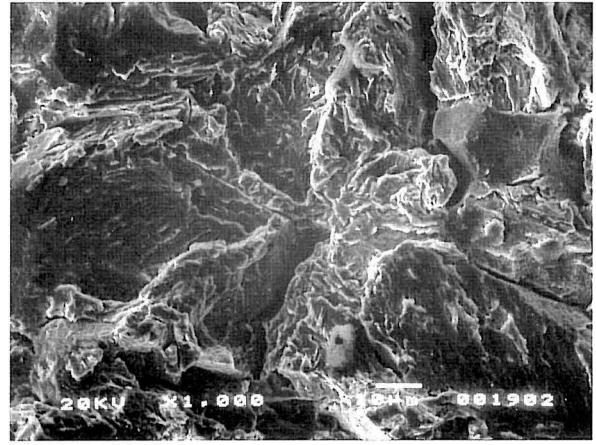
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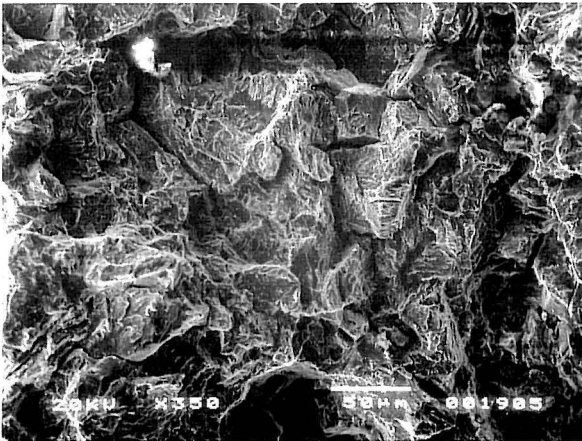




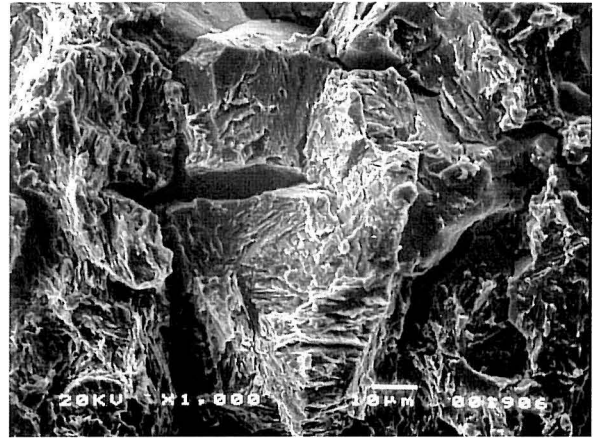
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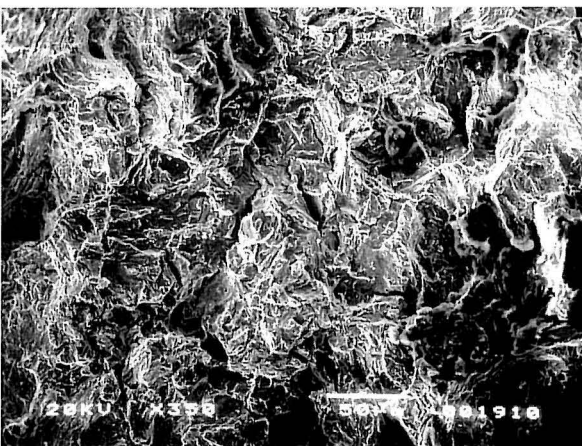
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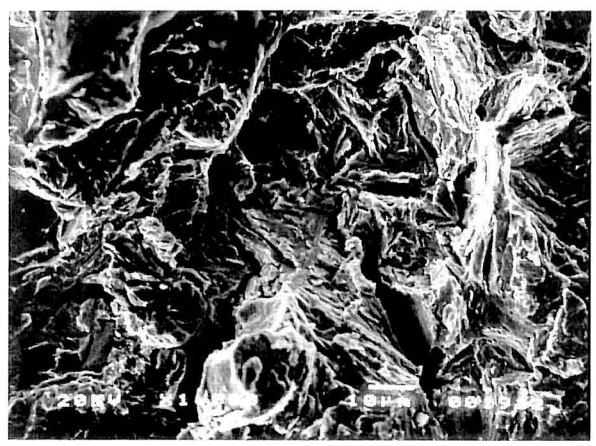
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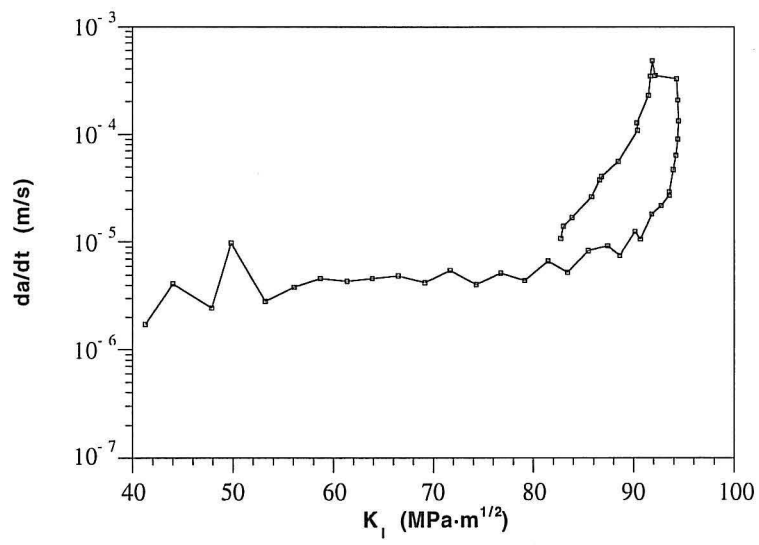
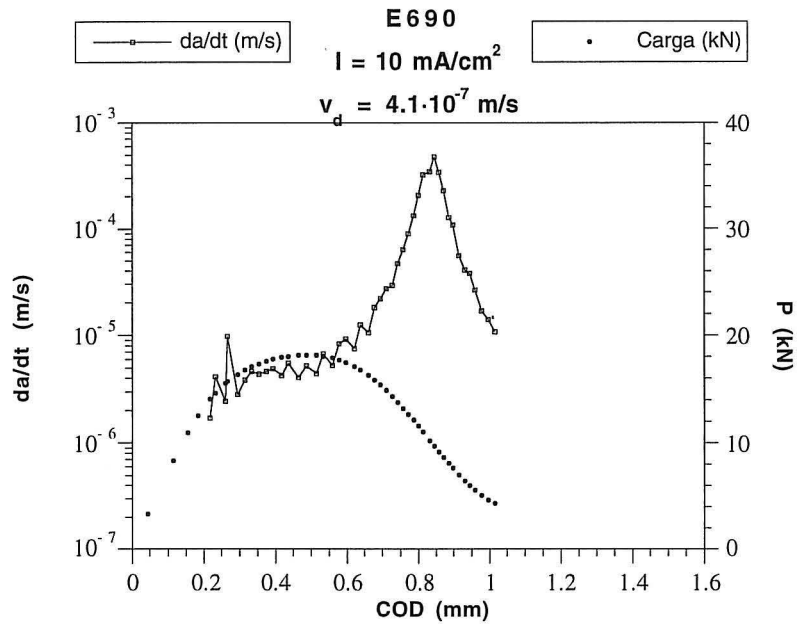


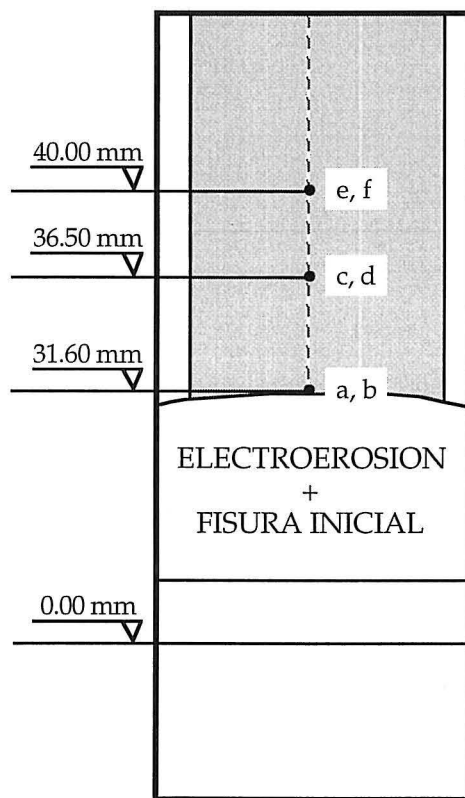
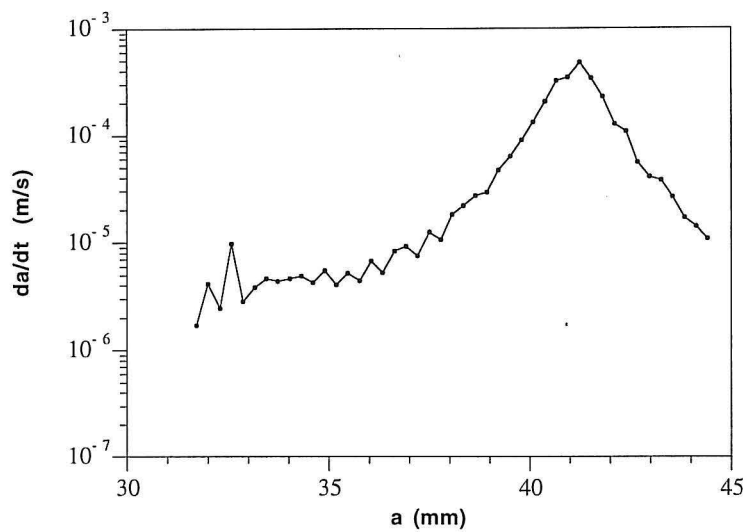
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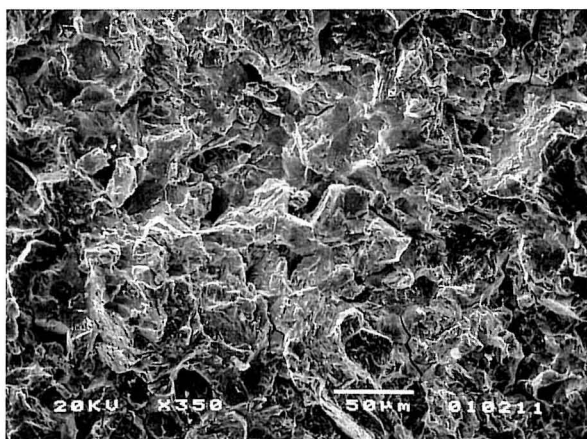


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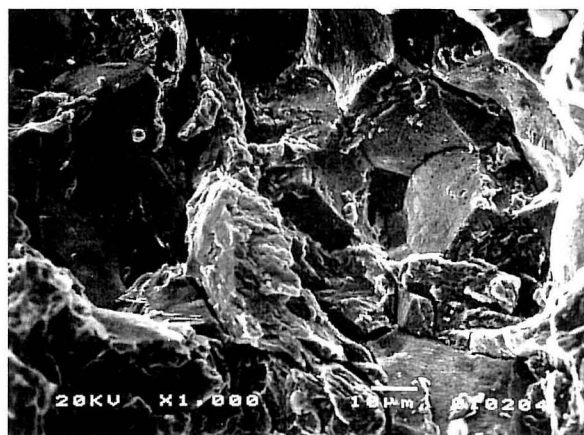
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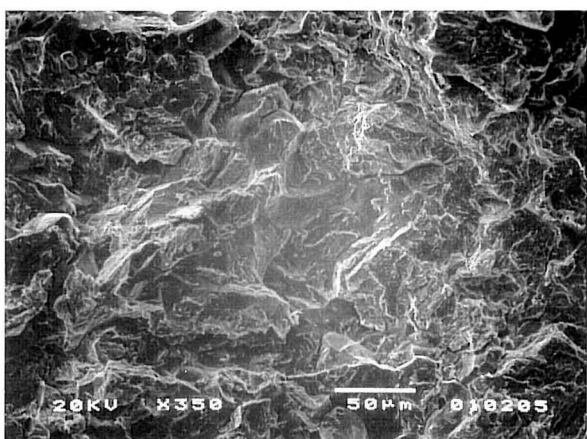




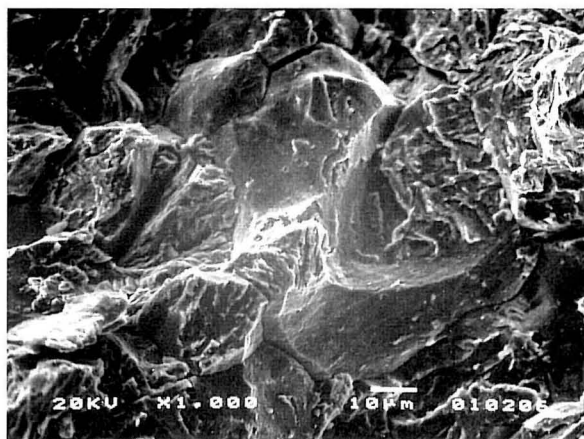
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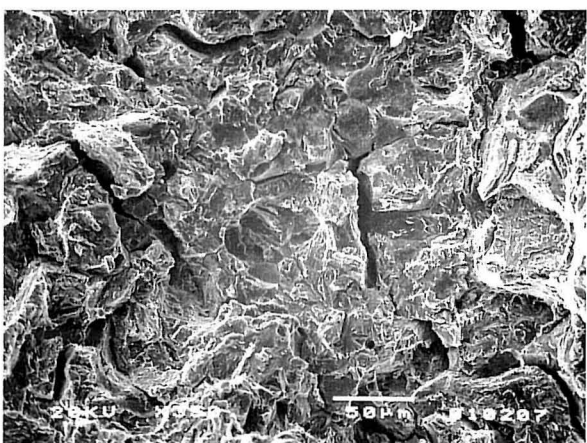
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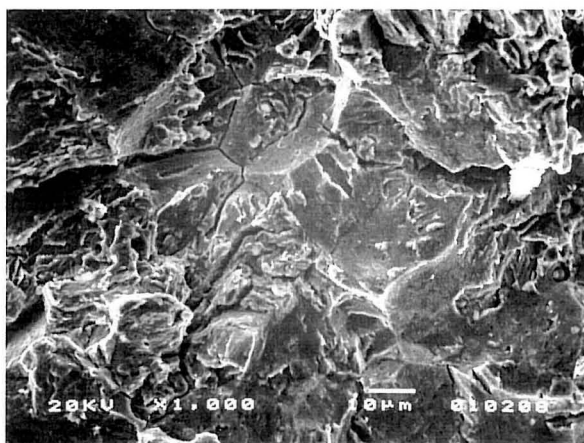
(c)



(d)



(e)



(f)

CL1.J2

