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چکیده

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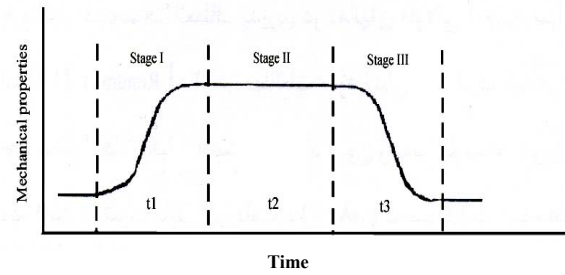
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شکل ۱: مراحل مختلف عملیات حرارتی آستمبر.

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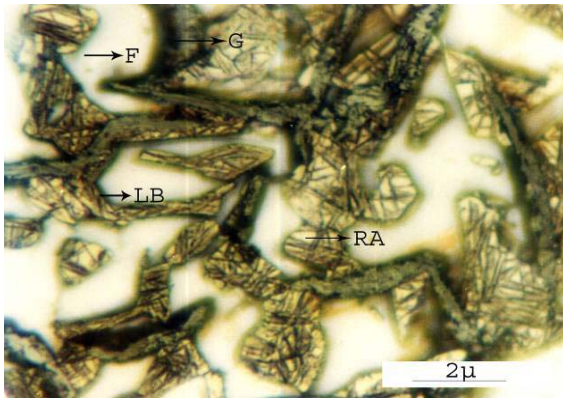
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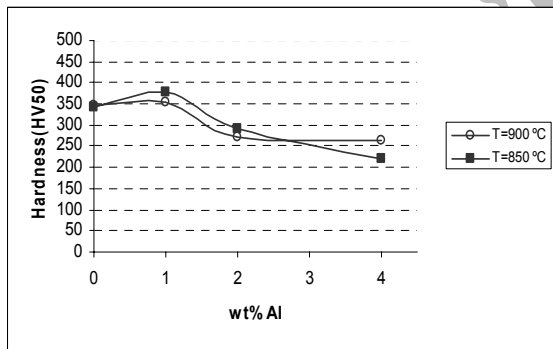
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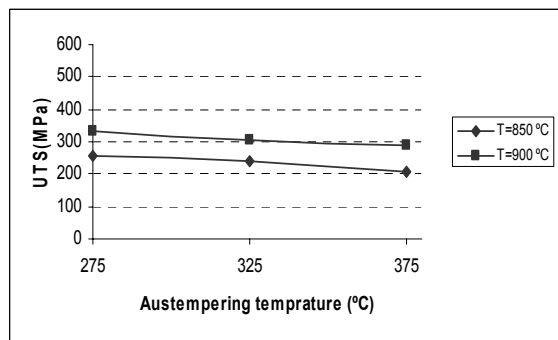
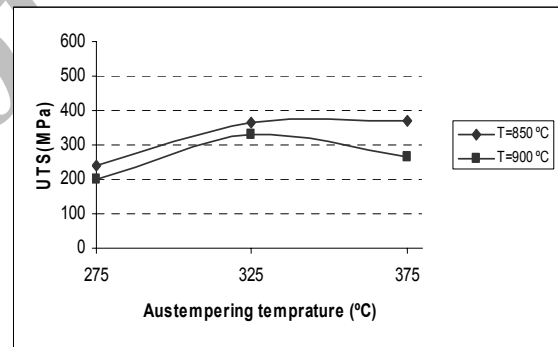
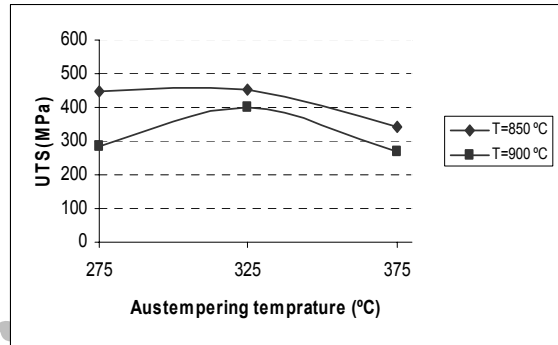
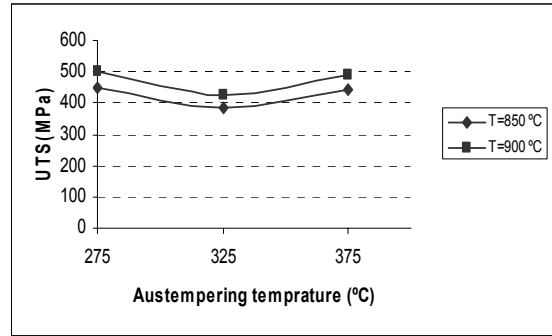
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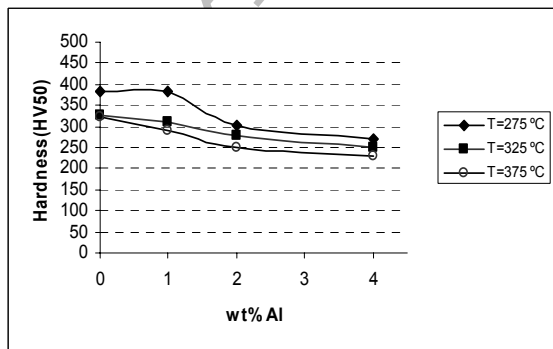
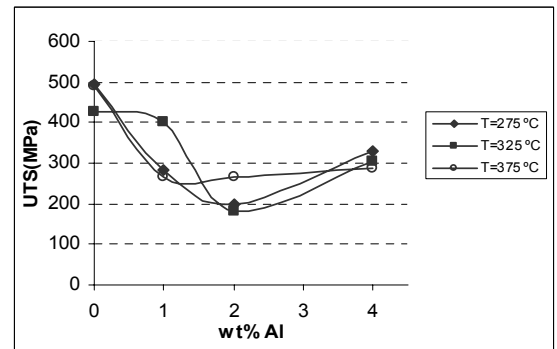
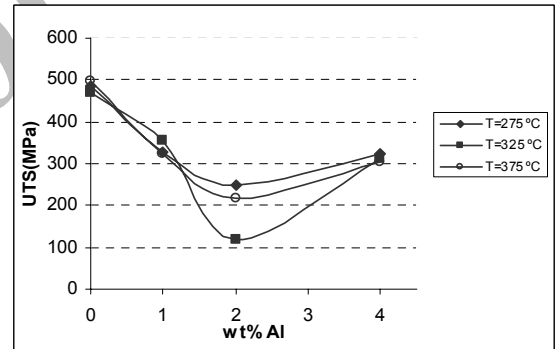
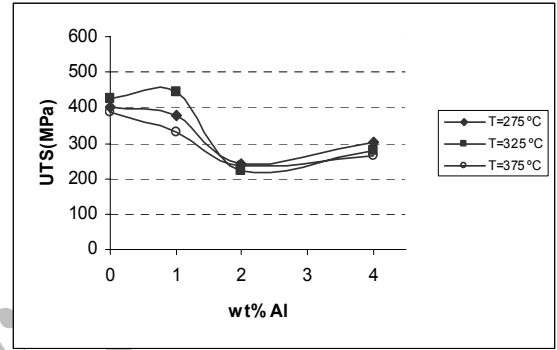
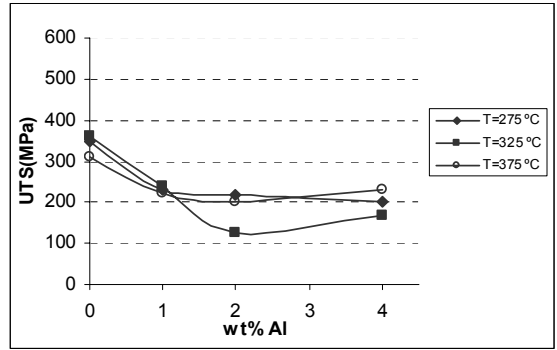


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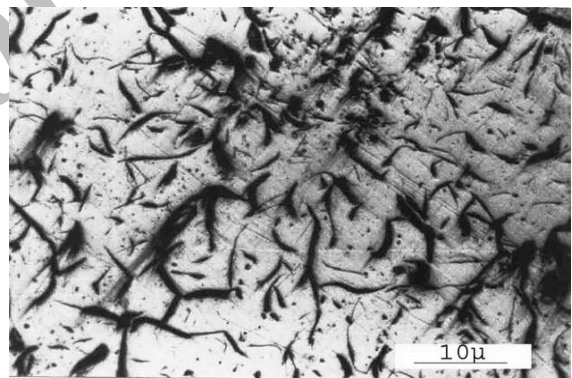
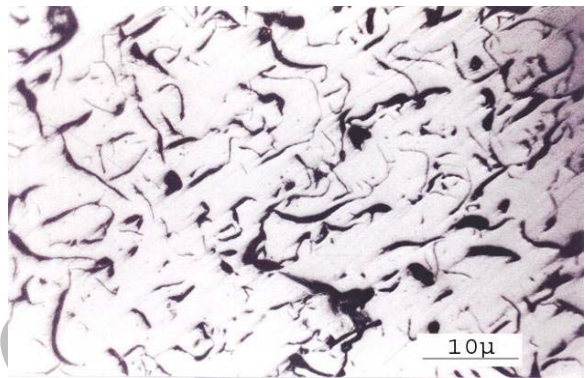
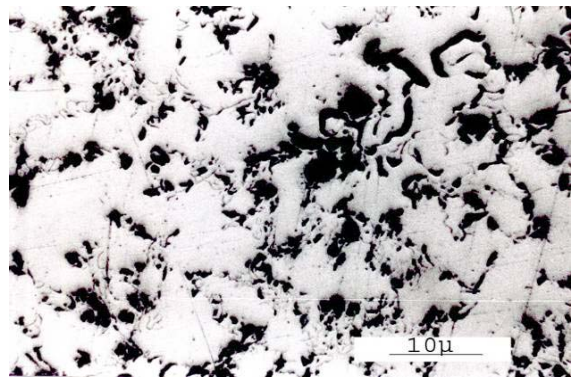
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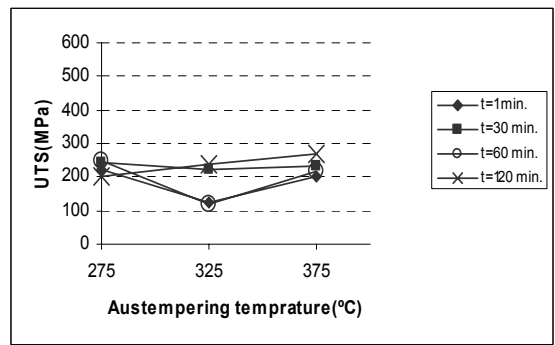
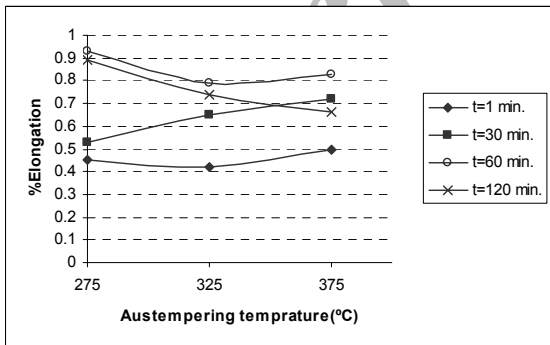
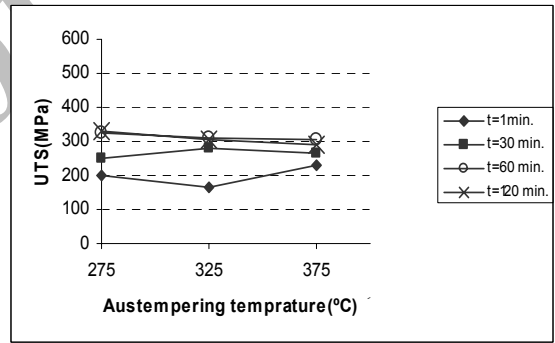
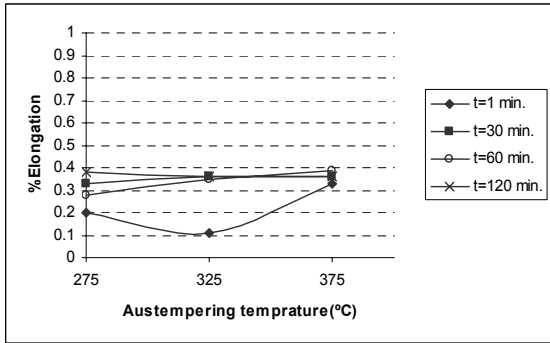
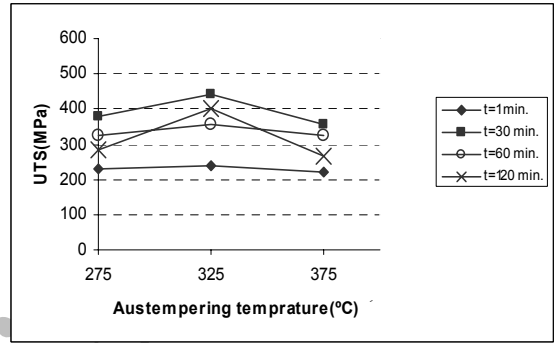
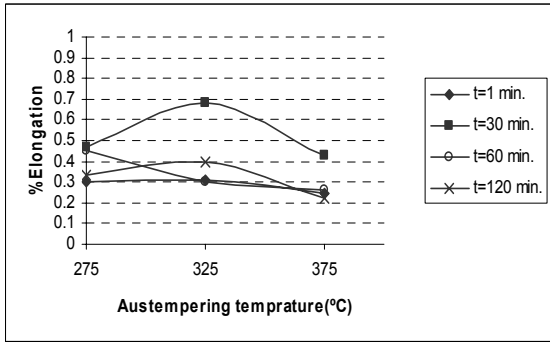
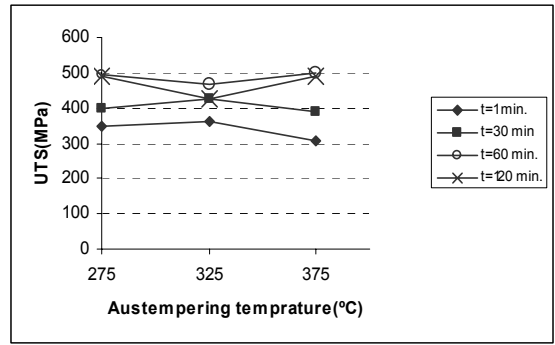
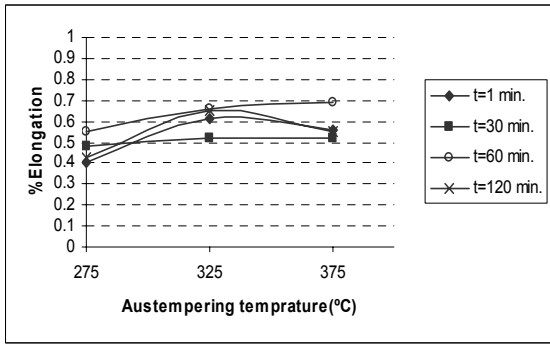
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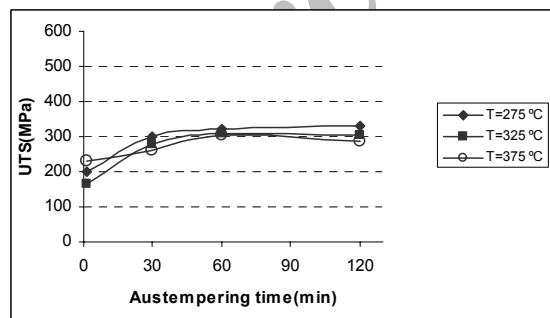
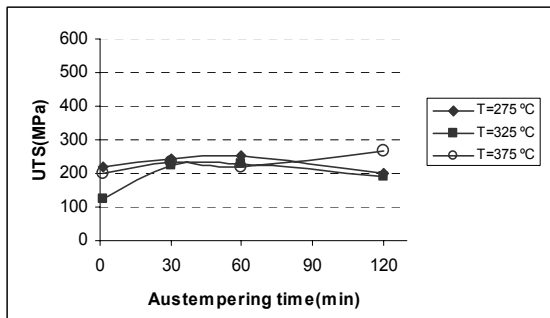
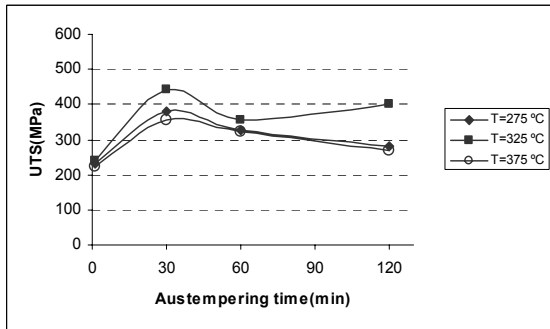
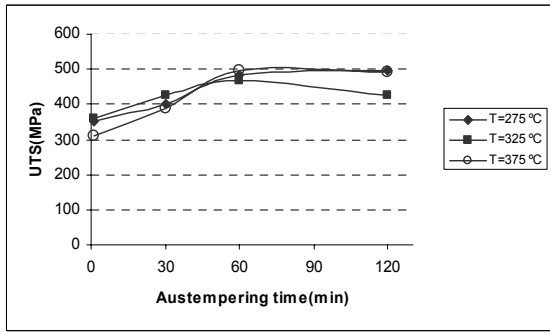
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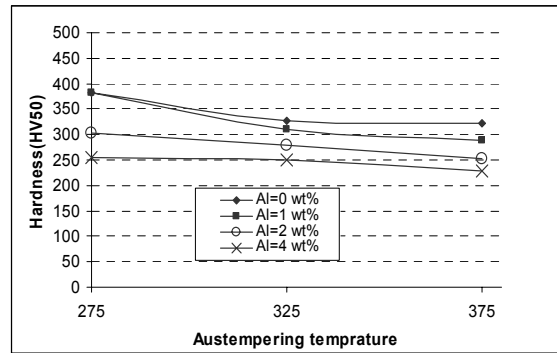
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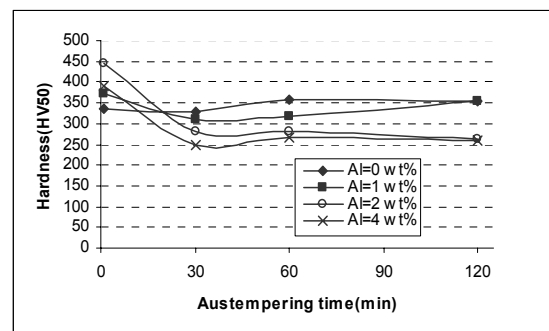
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Archive of SID



- 1 - Boutorabi, S. M. A., Young, J. M., Kondic, V. and Salehi, M. (1993). "The Tribological Behavior of Austempered Spheroidal Graphite Aluminum Cast Iron." *Wear*, Vol. 165, PP. 19-24.
- 2 - Hayrynen, K. L., Loftus, S. M., May, R. L., Moore, D. J. and Rundman, K. B. (1995). "Microstructural Study of Ausformed-Austempered Ductile Iron." *AFS Transaction*, PP. 157-161.

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- 3 - Nili Ahmadabadi, M., Abbasi Khazai, B. and Bahmani, M. (1997). "Effect of Austempering Variables on the Mechanical Properties of Ni-Mn-Cu ADI." *AFS Transaction*, PP. 501-505.
 - 4 - Boutorabi, S. M. A., Young, J. M. and Kondic, V. *Austempered Kinetics of Spheroidal Graphite Aluminum Cast Iron*. Unpublished Work.
 - 5 - Krishnaraj, D. and Seshan, S. (1995). "Influence of austempered variables on the structure and properties of unalloyed ADI." *AFS Transaction*, PP. 767-775.
 - 6 - Boutorabi, S. M. A. and Fallah, A. A. (1997). *Austempering Kinetics of Low Carbon Aluminum Cast Iron*, *AFS Transaction*, PP.757-761.
 - 7 - Ghoreshy, M. and Kondic, V. (1983). "Structure and Mechanical and Casting properties of Fe-C-Al Cast Iron." *Solidification Technology in the Foundry and Cast House*, *Metals Society*, PP. 562-568.
 - 8 - Martinez, F. and Stefanescu, D. M. (1983). "Properties of compacted/vermicular graphite cast irons in the Fe-C-Al system by ladle and in-mold treatment." *AFS Transaction*, 1983, PP. 593-606.
 - 9 - Boutorabi, S. M. A. and Young, J. M. and Kondic, V. (1992). "Ductile aluminum cast iron." *Cast Metals*, Vol. 5, No. 3, 1992, PP. 122-129.
 - 10 - Boutorabi, S.M.A. (1998). "Austempered Cu and Ni alloyed aluminum ductile iron." *Metall. 52 Jahrgang*, No. 10-11, PP.81-88.
 - 11 - Boutorabi, S. M. A. and Din, T. (1997). "Microstructure and Mechanical Properties of as Cast and Austempered Si and Al Containing grey Cast Irons." *International Journal of Engineering Iran University of Science & Technology*, Vol. 8, No. 1a, PP. 23-33.
 - 12 - Dorazil, E. (1986). "Mechanical properties of austempered ductile iron." *Foundry M&T*, PP.36-45.
 - 13 - Dawson, J. V. (1972). "High strength grey cast irons containing 2 percent aluminum." *BCIRA Report*, No. 1058, PP.26-31.

واژه های انگلیسی به ترتیب استفاده در متن

- 1 - Processing Window
- 2 - Acicular
- 3 - Round Ended Graphite
- 4 - Processing Window