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Failure of an Inconel 718 die used in production of hot copper direct extrusion

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Steel dies used in copper hot extrusion failed after several extrusion 2-5 tons - during the process of extrusion the die is subjected to high temperatures and stresses and the die failed mainly by plastic deformation. Industry considers new die materials, such as Inconel 718. In this research it was shown that during production using an Inconel 718 die one can extrude 8 times more material (approx. 40 tons). After the extrusion of 40 tons of copper small cracks and plastic deformation on die aperture are seen. The die was discarded and used to investigate die failure mechanisms. By using different investigation methods (optic and scanning electron microscopy, hardness and microhardness tests) microstructure changes were observed.

Biography

M Schwartz has completed her BA with cum laude, in Materials Engineering specializing in electronic materials and metals at Ben Gurion University in Israel. In 2003, she graduated with MSc in Electrical Engineering (Physical Electronics) in the University of Tel Aviv in Israel. This year 2015, she will complete her PhD in Materials Engineering in the field of metallurgy at the Politehnica University of Bucharest, Romania. From 1996, she filled roles in engineering and High level management in the field of nanotechnology at Intel (IDC), Tower Semiconductor and Zoran Cooperation. She invented patents in communication and media in the United States. Recently, she has published several papers in reputed journals in the field of metallurgy, extrusion and special metals. Today she is a consultant and give guides to enterprises in the field of metallurgy (castings, extrusion & drawing), and management in Europe, including Trip Materials Inc, Switzerland and S.C Laromet S.A, Romania.

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