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## Innovative carbon-free precipitation hardened tool steel composites

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Good combinations between strength and toughness are always the aim of all researchers working in the field of material science. Unfortunately strength and toughness of materials are alloys counter acting properties. However, carbon contents in the steel define to a great extent its strength and toughness. In this research an effort is paid to produce steel alloy composites that can give higher strength together with good toughness without alloying with carbon. The mechanism of strengthening in Iron-Cobalt-Tungsten composite alloys with variations in Co and W contents is investigated. The fracture toughness, hardness, and strength are measured for all alloy composites under investigation. The changes in microstructures after heat treatment are emphasized using metallurgical microscopy and SEM-aided with EDX analyzing unit.

### Biography

Saied Elghazaly is working with Steel Technology Department at Central Metallurgical R&D Institute, Cairo-Egypt. He is Expert in Metallurgy and Material Science with about 60 published articles in periodical and conferences.

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