
Summary of publications by J.H. Abboud

[Microstructure of titanium injected with SiC particles by laser processing](#)

JH Abboud, DRF West - *Journal of materials science letters*, 1991 - Springer

In recent years there has been increasing interest in the use of high-power CO₂ lasers for surface treatments of Ti and Ti alloys involving melting, alloying, cladding and particle injection. The last of these methods in this context is of interest in relation to the

[Ceramic–metal composites produced by laser surface treatment](#)

JH Abboud, DRF West - *Materials science and technology*, 1989 - maneyonline.com

Abstract The injection of SiC particles (150 μm size) into laser surface melted commercial purity titanium, Ti–6Al–4V (wt-%) alloy, and Ti–2·5Cu (wt-%) alloy has been investigated using 1·75 kW laser power, 5 mm beam diameter, 0·15 gs–l powder flow rate and ...

[Surface melting of nodular cast iron by Nd-YAG laser and TIG](#)

KY Benyounis, OMA Fakron, **JH Abboud**... - *Journal of materials ...*, 2005 - Elsevier

The effect of surface melting and rapid solidification on the structure and hardness of nodular cast iron has been investigated. Two heat sources were used for surface melting mainly, laser beam (LB) and electric arc generated between the tungsten electrode and ...

[Functionally gradient titanium-aluminide composites produced by laser cladding](#)

JH Abboud, DRF West, RD Rawlings - *Journal of Materials Science*, 1994 - Springer

Abstract The laser surface cladding of Ti-Al/TiB₂ composites was investigated as a means of producing a functionally gradient material on a commercially pure Ti substrate. Single and double layers were produced. The processing parameters were: 1.7 kW laser power, 3 ...

[Functionally graded nickel-aluminide and iron-aluminide coatings produced via laser cladding](#)

JH Abboud, RD Rawlings, DRF West - *Journal of materials science*, 1995 - Springer

Abstract Functionally graded nickel-aluminide and iron-aluminide in the form of superimposed clad layers up to ~ 4 mm total thickness were produced on nickel and on iron based substrates, respectively. A continuous wave carbon dioxide laser and two separate ...

[Laser surface treatments of iron-based substrates for automotive application](#)

JH Abboud, KY Benyounis, AG Olabi... - *Journal of materials ...*, 2007 - Elsevier

In the present work laser surface alloying of low carbon steel with carbon has been investigated for automotive application. The laser used was Nd-YAG, having a wavelength of 1.06 μm. It was operated at energy levels between 5 and 30J, pulse duration from 1.5 to ...

[Microstructure and erosion resistance enhancement of nodular cast iron by laser melting](#)

KF Alabeedi, **JH Abboud**, KY Benyounis - Wear, 2009 - Elsevier

The surface of nodular graphite cast iron samples was melted by 50% overlapping passes from a 3kW CW CO₂ laser. The objective was to modify the microstructure and improve the hardness and erosion resistance of the surface. The results showed that laser melting led ...

[Functionally gradient layers of Ti–Al based alloys produced by laser alloying and cladding](#)

JH Abboud, RD Rawlings... - Materials science and ..., 1994 - maneyonline.com

Abstract Laser surface alloying and cladding have been used with the aim of producing functionally gradient materials based on the Ti–Al system. A continuous powder feed into a laser generated melt pool produced several fully overlapping layers of increasing Al ...

[Surface nitriding of Ti–6Al–4V alloy with a high power CO₂ laser](#)

JH Abboud, AF Fidel, KY Benyounis - Optics & Laser Technology, 2008 - Elsevier

Surface nitriding of a Ti–6Al–4V alloy by laser melting in a flow of nitrogen gas has been investigated, with the aim of increasing surface hardness and hence improving related properties such as wear and erosion resistance. The effect of the scanning speed, ...

[Processing aspects of laser surface alloying of titanium with aluminium](#)

JH Abboud, DRF West - Materials Science and Technology, 1991 - maneyonline.com

[Microstructure of Ti-TiB₂ surface layers produced by laser particle injection](#)

JH Abboud, DRF West - Journal of materials science letters, 1994 - Springer

Surface treatments of materials using high power CO₂ lasers typically involve moving a substrate under the laser beam and generating a melt zone; concurrently, metal or ceramic or a combination of metal+ ceramic in the form of powder is introduced into the melted ...

[Rapid solidification of M2 high-speed steel by laser melting](#)

KY Benyounis, OM Fakron, **JH Abboud** - Materials & Design, 2009 - Elsevier

The effects of laser surface melting and rapid solidification on the microstructure of M2 high-speed steel (HSS) have been investigated. A solid state pulse Nd-YAG laser of wavelength 1.06 μm, maximum power of 100W, beam diameter~ 1mm, and pulse duration of 0.8 and ...

[Property assessment of laser surface treated titanium alloys](#)

JH Abboud, DRF West, RH Hibberd - Surface engineering, 1993 - maneyonline.com

Laser treatments have been used to produce a series of surface layers containing up to~ 65 at.-% Al on a near α IMI685 titanium alloy substrate and a mixture of aluminium powder and silicon carbide was used to produce a surface composite layer based on ...

[In situ production of Ti-TiC composites by laser melting](#)

JH Abboud, DRF West - Journal of materials science letters, 1992 - Springer

In previously reported work [1-4] high-power CO₂ lasers were used to produce Ti/SiC or TiC composite layers, approximately 1 mm thick, by the injection of the ceramic particles into the laser-melted zone of titanium and titanium alloys. The dimensions of these layers and the ...

[Surface carburizing of Ti-6Al-4V alloy by laser melting](#)

AF Saleh, **JH Abboud**, KY Benyounis - *Optics and Lasers in Engineering*, 2010 - Elsevier

Surface carburizing of a Ti-6Al-4V alloy using laser melting has been investigated experimentally, with the aim of increasing surface hardness and hence improving related properties such as wear and erosion resistance. The surface of the material was coated ...

[Laser surface alloying of titanium with aluminium](#)

JH Abboud, DRF West - *Journal of materials science letters*, 1990 - Springer

The use of lasers for the surface modification of titanium and its alloys has been the subject of several investigations [1-6]. Draper et al.[1] have laser surface alloyed palladium into a titanium substrate to improve corrosion protection in boiling HCl; the results were ...

[Microstructures of titanium-aluminides produced by laser surface alloying](#)

JH Abboud, DRF West - *Journal of materials science*, 1992 - Springer

The microstructures of Ti-Al layers (from 43-80 at% Al) produced by laser surface alloying of titanium substrate with a powder feed technique have been investigated. The laser processing parameters were; 1.8 kW laser power, 3 mm beam diameter, 7 mm s⁻¹ ...

[Microstructure and corrosion behavior of austenitic stainless steel treated with laser](#)

IY Khalfallah, MN Rahoma, **JH Abboud**... - *Optics & Laser ...*, 2011 - Elsevier

Surface modification of AISI316 stainless steel by laser melting was investigated experimentally using 2 and 4kW laser power emitted from a continuous wave CO₂ laser at different specimen scanning speeds ranged from 300 to 1500mm/min. Also, an ...

[Surface hardening of commercially pure titanium by laser nitriding: response surface analysis](#)

AR Hamad, **JH Abboud**, FM Shuaeib... - *Advances in Engineering ...*, 2010 - Elsevier

In this work laser surface nitriding was performed to enhance wear and erosion resistance of pure titanium by increasing its surface hardness while keeping the strength and ductility of the core for static and dynamic loading resistance. The Response Surface Methodology (...

[Laser surface melting of beta titanium alloys](#)

Laser surface melting of Ti and Ti alloys has been used to obtain rapid solidification with resultant fine-scale microstructures and segregation [1, 2]. For example, laser surface melting of α -Ti (eg commercial purity Ti; Ti-5.5 Al-3.5 Sn-INb-0.3 Si) and (oL+ β)-Ti (eg Ti-**H Abboud**, DR West - *J. Mater. Sci. Lett*, 1992

[Martensite formation in Ti-Al layers produced by laser surface alloying](#)

JH Abboud, DRF West - *Materials science and technology*, 1991 - maneyonline.com

Abstract The microstructures of Ti–Al layers produced by laser surface alloying of a Ti substrate have been investigated for Al contents in the range 17–36 at.-%. The alloyed layers were obtained using a continuous wave CO₂ laser and a powder feed technique ...

[Laser surface alloying of titanium with silicon](#)

JH Abboud, DRF West - Surface Engineering, 1991 - maneyonline.com

Abstract An investigation is reported of the laser surface alloying of titanium with silicon using a 2 kW carbon dioxide laser and continuous feed of silicon powder. Alloyed zones containing up to 20 at.-% Si were produced using the following processing parameters: 1· ...

[Microstructure and erosion characteristic of nodular cast iron surface modified by tungsten inert gas](#)

JH Abboud - Materials & Design, 2012 - Elsevier

The surface of nodular cast iron has been melted and rapidly solidified by Tungsten Inert Gas (TIG) process to produce a chilled structure of high hardness and better erosion resistance. Welding currents of magnitude 100, 150, and 200A at a constant voltage of 72 ...

[Microstructure of Ti-TiB₂ surface layers produced by laser particle injection](#)

JH Abboud, DRF West - Journal of materials science letters, 1994 - Springer

Surface treatments of materials using high power CO₂ lasers typically involve moving a substrate under the laser beam and generating a melt zone; concurrently, metal or ceramic or a combination of metal+ ceramic in the form of powder is introduced into the melted ...

[Microstructure and properties of laser produced Ti-Al functionally gradient clad](#)

JH Abboud, DRF West, RD Rawlings - Materials science and technology, 1994 - cat.inist.fr

Résumé/Abstract The microstructure and oxidation and erosion resistance of three laser clad layers, namely, Ti– 14.5 Al– 3.7 V, Ti– 17 Al– 3.7 V, and Ti– 30 Al– 2.8 V (all wt-%), have been investigated. Using a continuous wave CO₂ laser and powder feed technique, ...