

Suggestions for future work

In order to complement the work developed within the scope of this thesis, I give some suggestions for possible future works:

- Evaluate the gain in thermal conductivity of the laser-glazed thermal barrier coating system due to densification of the external region of the ceramic coating.
- Study the thermal shock/cycling resistance of the laser-glazed coatings.
- Evaluate the erosion resistance of coatings, both as-sprayed and laser-glazed.
- Study the mechanical properties of the coatings (microhardness, residual stresses) before and after the glazing process.
- Improve the numerical model by taking into account the issues referred at the end of the previous chapter.

List of communications

→ International

1. Improvement of plasma-sprayed zirconia-based thermal barrier coatings by laser glazing
C. Batista, A. Portinha, R. M. Ribeiro, V. Teixeira, C.R. Oliveira
RIVA - 5th Iberian Vacuum Meeting, Guimarães, Portugal, 18-21 September 2005, oral communication.
2. Surface modification of ceramic thermal barrier coatings by laser irradiation
C. Batista, A. Portinha, R. M. Ribeiro, V. Teixeira, C.R. Oliveira.
RIVA - 5th Iberian Vacuum Meeting, Guimarães, Portugal, 18-21 September 2005, poster presentation.
3. Surface treatment of ceramic thermal barrier coatings using laser radiation
C. Batista, A. Portinha, R. M. Ribeiro, V. Teixeira, C.R. Oliveira.
International Conference on Surfaces, Coatings and Nanostructured Materials - ICSCnanoSMAT 2005, Symposium 6, Aveiro, Portugal, 7-9 September 2005, poster presentation
4. Laser Glazing of Plasma-Sprayed Thermal Barrier Coatings using CO₂ and YAG lasers
C. Batista, A. Portinha, R. M. Ribeiro, V. Teixeira, C.R. Oliveira.
European Materials Research Society Spring Meeting – E-MRS 2005, Symposium J, Strasbourg, France, 31-3 June 2005, oral communication.
5. Hot Corrosion of Laser-Glazed Plasma-Sprayed Thermal Barrier Coatings
C. Batista, A. Portinha, R. M. Ribeiro, V. Teixeira, C.R. Oliveira.
European Materials Research Society Spring Meeting – E-MRS 2005, Symposium K, Strasbourg, France, 31-3 June 2005, poster presentation.
6. Laser-glazing of plasma-sprayed thermal barrier coatings: Influence of processing parameters
C. Batista, A. Portinha, R. M. Ribeiro, V. Teixeira, C.R. Oliveira.
MATERIAIS 2005 – XII Portuguese Materials Society Meeting/III International Materials Symposium, Symposium 3, Aveiro, Portugal, 20-23 March 2005, poster presentation.
7. 3-D modelling of high power laser interaction with porous ZrO₂-based coatings
C. Batista, A. Portinha, R. M. Ribeiro, V. Teixeira, C.R. Oliveira.
MATERIAIS 2005 – XII Portuguese Materials Society Meeting/III International Materials Symposium, Symposium 7, Aveiro, Portugal, 20-23 March 2005, poster presentation.

8. Surface Laser-Glazing of Plasma-Sprayed Thermal Barrier Coatings
C. Batista, A. Portinha, R.M. Ribeiro, V. Teixeira, M.F. Costa, C.R. Oliveira.
European Materials Research Society Spring Meeting – E-MRS 2004, Symposium N,
Strasbourg, France, 24-28 May 2004, poster presentation.

→ National

1. Improved hot corrosion response of yttria stabilized zirconia thermal barrier coatings
C. Batista, A. Portinha, R. M. Ribeiro, V. Teixeira, C.R. Oliveira.
Jornadas do Centro de Física – 2005, Universidade do Minho, Guimarães, 14 October
2005, poster presentation.
2. Tratamento superficial de revestimentos cerâmicos por laser
C. Batista, A. Portinha, R. M. Ribeiro, V. Teixeira, M.F. Costa, C.R. Oliveira.
5^{as} Jornadas do Grupo de Revestimentos Funcionais - GRF-2004, Universidade do Minho,
Guimarães, 15 December 2004, oral communication.

List of publications

1. C. Batista, A. Portinha, R.M. Ribeiro, V. Teixeira, M.F. Costa and C.R. Oliveira, Surface Laser-Glazing of Plasma-Sprayed Thermal Barrier Coatings, *Applied Surface Science* 247 (2005) 313-319.
2. C. Batista, A. Portinha, R.M. Ribeiro, V. Teixeira, M.F. Costa and C.R. Oliveira, Morphological and Microstructural Characterization of Laser-Glazed Plasma-Sprayed Thermal Barrier Coatings, *Surface and Coatings Technology* 200 (2006) 2929-2937.
3. C. Batista, A. Portinha, R.M. Ribeiro, V. Teixeira, C.R. Oliveira, Evaluation of Laser-Glazed Plasma-Sprayed Thermal Barrier Coatings under High Temperature Exposure to Molten Salts, *Surface and Coatings Technology* 200 (2006) 6783-6791.