Formation of Aluminium or Silicon Nitrides by mean of Nitrogen plasma Jets

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The formation of Aluminium or Silicon nitrides by mean of a plasma jet is investigated: powers of the respective metals are put in a crucible in front of a non transfered nitrogen plasma jet. The nitrides in the solid phase are identified by X ray diffraction, the condensed vapor pheases are observed with an electronic microscope. The calorimetric method is used to follow the degree of reaction while spectroscopic measurements are made on the vapor phases. The continual production of Aluminium or Silicon nitrides is considered. The action of a nitrogen plasma jet on a mixing of Al, Si, SiO_2 powders leads to the synthetisation of oxynitrides and SiAlON ceramics.

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