

MATERIALS AND STRUCTURES SYMPOSIUM (C2)  
Specialised Technologies, Including Nanotechnology (8)

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LOW COST CONCENTRATOR SOLAR ARRAY

**Abstract**

Since the 70's, various researches have been undertaken to concentrate the solar flux on solar panels. In the 90's, concentrators with low concentration ratio appeared ( $C \leq 2.5$ ), easily adapted to classical panels. From early 2000, the first commercial spacecrafts with such a technology were launched. Nevertheless, a gradual loss of power appeared and deep investigations concluded that this was due to various causes: off-pointing, darkening and wrinkling of the reflective surfaces. From this incident, attention was paid to the contamination of the reflectors and more particularly to their operational temperature. Recently, in 2005, JAXA launched its small REIMEI scientific spacecraft, with two solar arrays equipped with a single lateral reflector. The good results achieved have triggered a new initiative in Europe to study a new concept of lightweight concentrator. The first results of this study including contamination and thermo-mechanical issues are presented.