



## **DEVELOPMENT TRENDS OF COLD PLASMA REACTORS IN THE GLOBAL CONTEXT OF CARBON EMISSION REDUCTION**

**Iulian Rusu**

*"Gh. Asachi" Technical University, Faculty of Chemical Engineering and Environmental Protection, Bd. Dimitrie Mangeron 71, OP10 CP2014, Iasi 70050, Romania, e-mail: [rusu\\_iulian@hotmail.com](mailto:rusu_iulian@hotmail.com), fax: +40 232 271311*

---

### **Abstract**

This paper brings a review on the trends of arc plasma reactors, in the new millennium, as an alternative contribution to the reduction of carbon emission at global level. The development of technically and economically feasible plasma processes for the production of hydrogen is analyzed. Literature provides data on achievable intensification of the involved chemical processes comparing with those from the classic reactors. The hydrogen production is studied starting from hydrocarbons and alcohols by several methods as: cracking (TC), partial oxidation with oxygen (PO), steam reforming (SR), steam reforming with oxygen (SRO), CO<sub>2</sub> reforming (CDR) and CO<sub>2</sub> reforming with oxygen (CDRO). The automotive and aerospace applications are also taken into account.

*Keywords:* gliding arc reactor, non-equilibrium plasma, mechanism, automotive applications, aerospace applications

---